PROCEDURES FOR ENCODING TOXICITY DATA PUBLISHED IN THE OPEN LITERATURE FOR USE IN ECOLOGICAL RISK ASSESSMENTS

EFED Chemical Literature Acquisition and Skimming

Prepared for:
U.S. Environmental Protection Agency
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RELATED SOPS

Documentation Related to the EFED Project

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Literature Acquisition	ECOTOX LitAcquisitionPaper.doc
LITE EVAL Coding, Data Entry User Guide	LiteEvalSOP.doc
Chemical Verification SOP	ECOTOX Chemical Verification and Entry SOP.doc
EFED SOP (March, 2004)	EFEDSOP.wpd (Historical list of special EFED notations in Reference Manager fields)
EFED Reports	EFED reports.doc (project tracking and final reports)

OVERVIEW

This Standard Operating Procedure (SOP) documents the procedure for EPA Office of Pesticide Products (EFED) chemical verification, search and identify toxicological literature acquisition and skimming, for chemicals identified in MED Work Requests. See Figure 1 for the overview of the EFED task workflow.

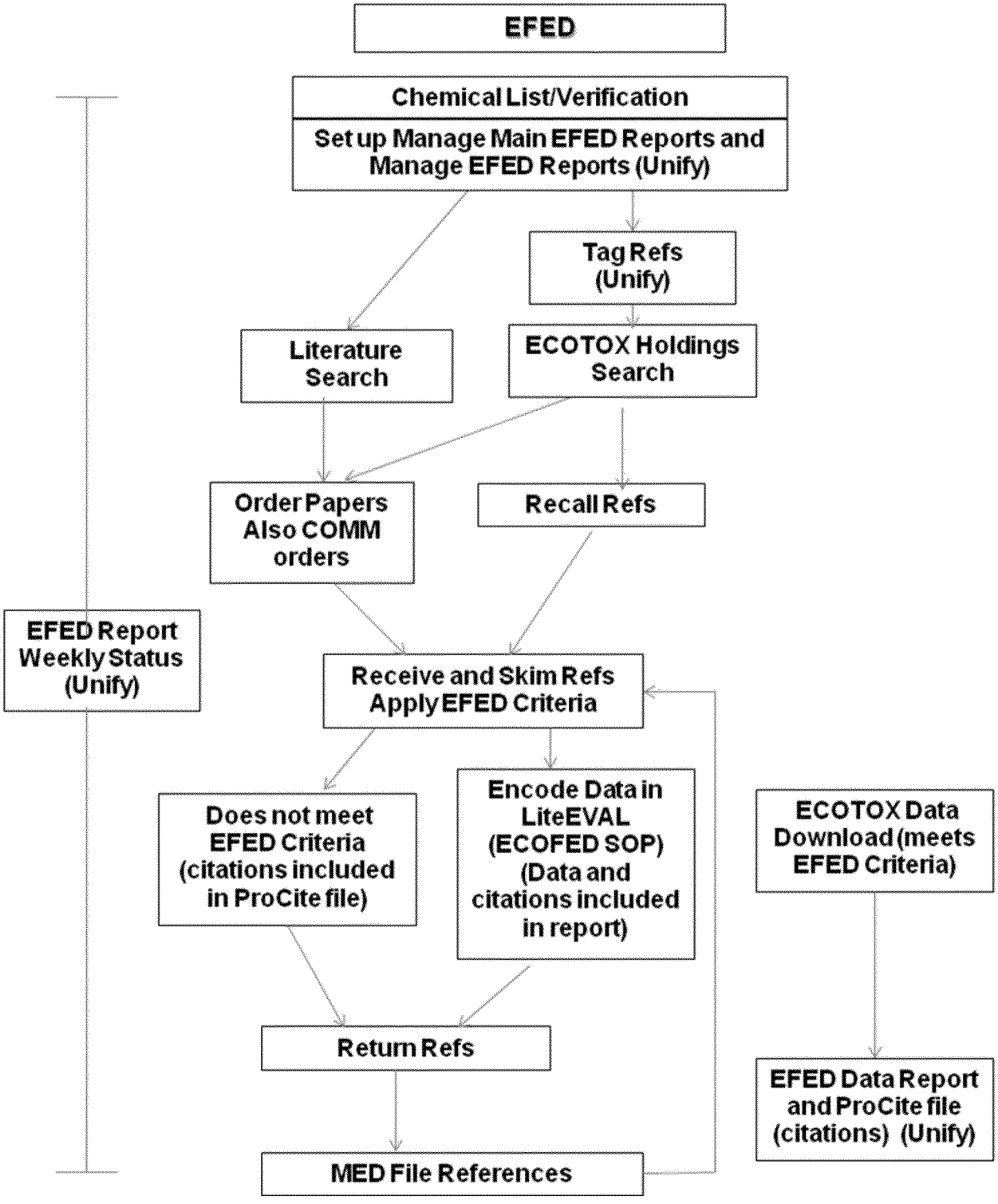


Figure 1. EFED Workflow

EFED CHEMICAL VERIFICATION

The EFED chemical verification process is:

1. Verify CAS numbers provided by EFED are in the Unify Chemicals system
   If yes, go to step 2
   If no, this goes to chemical verification

2. Verify names provided by EFED are in the Unify Chemicals system
   If yes, go to step 3
   If no, this goes to chemical verification

3. Finding related chemicals that may be of interest to EFED (e.g., degradates, other forms, etc.) and synonym names and trade names to include in the search strategy. Please note that trade names should be used with care. Ensure that the trade name is not used for multiple chemicals prior to using it in the literature search.

Unify Chemicals: Search the Unify Chemicals for names that are similar to the chemical names that EFED has requested. The chemical verification staff should search for part of the name in the Unify Chemicals s to see if there are any similar name matches.

For example EFED has requested pentachlorophenol. CSC noted that there was also pentachlorophenol sodium salt. CSC asked EFED if this should be added to the pentachlorophenol chemical list. A second example is for Antimycin A. The chemical verification staff should search on just antimycin to check for additional chemicals. A third example is for metal compound. If EFED requested copper sulfate, the metal copper should also be used. Some examples of emails sent to EFED asking questions about chemical names are below.

PAN: The Pesticide Action Network (http://www.pesticideinfo.org) is a site that provides information about pesticides. After entering a name or CAS number into the search field, choose the chemical of interest from the search results and scroll down to the bottom of the page. Related chemicals will be listed here along with a reason. Parent chemicals, derivatives, and degradates/metabolites can be found here.

PFATE: EPA's Pesticide Fated Database is a database that provides degredates for pesticides. Searching on a chemical name returns associated degredates. These degredates are sent to EFED for review.DOC: Check the Dictionary of Organic Names and Synonyms (CD-Rom program), the PAN website and the Chemfinder website (www.chemfinder.com) for synonym names. STN should also be used for the synonym search if a search was conducted to verify the chemical. These names should be compiled into a list that is used for searching bibliographic databases for new papers. Synonyms that may result in "false hits" during the literature searches should be in a separate list directly beneath the synonym list under the heading "Synonyms that may cause false hits". **Be sure that this list also includes additional chemicals that were found in step 3.

Appendix A from the Unify Chemicals Chemical Verification SOP (http://neptune.ecodev.csc.com/intranet/sop_list/SOPs/is a list of approved sources of verification for chemical names and structures. The most common websites searched include:

- Chemfinder
- Compendium of Pesticide Common Names
- California Department of Pesticide Regulation

If the chemical cannot be found on these websites or any other approved sources, an Internet search is performed to locate additional information. Any degradates found during synonym searches are forwarded to EPA for approval.

4. An email summarizing the information about the chemicals being coded for initial and refresh chemicals are sent to EPA prior to coding. This documents the chemicals, related chemicals and target species coded previously and documents issues that arise from the chemical verification, e.g. CAS Numbers and chemical names not matching, Emails need to be sent to EFED through the EPA MED Data Coordinator documenting any issues. Clarification should be requested from EPA and provide information that was found during verification and/or offer a resolution for the problem (see Email 1 below). The chemical structures should be included in the Email. If questions are sent to EFED, all questions and responses are tracked at G:// EFED Questions Tracking Table.xls.

5. Chemical Verification. Access the "ECOTOX Chemical Verification and Entry Procedure" and follow all standard verification procedures.

Example Email1

CSC has found an error with CAS numbers/chemical names assigned by the EFED group. CSC is seeking a clarification on the CAS numbers and names for the Chlorflurenol chemicals.

While performing chemical verification, CSC discovered that Chlorflurenol methyl and Chlorflurenol methyl ester are synonyms of the same CAS Number; 2536-31-4 (See the first record below). EFED reports that the CAS number for Chlorflurenol methyl ester as 37339-61-0. STN does not list Chlorflurenol methyl ester as a synonym for this CAS number (see second record below). It does appear that Chlorflurenol methyl ester is one of three components of this compound.

CSC would like to know if EFED would like the CAS Number 37339-61-0 to be used as it is not Chlorflurenol methyl ester. If so, what is the correct name that EFED would like associated with this CAS number.

L3 ANSWER 1 OF 1 COPYRIGHT 1985 ACS on STN
RN 2536-31-4 LREGISTRY
CN 9H-Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-, methyl ester (9CI)
(CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-, methyl ester (7CI, 8CI)
OTHER NAMES:
CN 2-Chloro-9-fluorenol-9-carboxylic acid methyl ester
CN 2-Chloro-9-hydroxy-9H-fluorene-9-carboxylic acid methyl ester
CN 2-Chloro-9-hydroxyfluorene-9-carboxylic acid methyl ester

CN CF 125
CN Chlorfluorenol IT 3456
CN Chlorfluorenolmethyl
CN Chlorflurecol methyl ester
CN Chlorflurecol-methyl
CN Chlorflurenol methyl
CN Chlorflurenol methyl ester
CN Chloroflurenol methyl ester

L8 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2005 ACS on STN
RN 37339-61-0 REGISTRY
ED Entered STN: 16 Nov 1984
CN 9H-Fluorene-9-carboxylic acid, 2,7-dichloro-9-hydroxy-, methyl ester, mixt. with methyl 2-chloro-9-hydroxy-9H-fluorene-9-carboxylate and methyl 9-hydroxy-9H-fluorene-9-carboxylate (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 9H-Fluorene-9-carboxylic acid, 2-chloro-9-hydroxy-, methyl ester, mixt. contg. (9CI)
CN 9H-Fluorene-9-carboxylic acid, 9-hydroxy-, methyl ester, mixt. contg. (9CI)
OTHER NAMES:
CN 2-Chloro-9-hydroxyfluorene-9-carboxylic acid methyl ester 9-hydroxyfluorene-9-carboxylic acid methyl ester 2,7-dichloro-9-hydroxyfluorene-9-carboxylic acid methyl ester mixt.
CN CF 125
CN Maintain CF 125
CN Morphactin CF 125
DR 63100-35-6
MF C15 H12 O3 . C15 H11 Cl O3 . C15 H10 Cl2 O3
CI MXS

Example Email 2
There are additional compounds that have bromine chloride identified as a synonym (listed below). Would EFED like these compounds included in the data for Bromine chloride (CAS# 13863-41-7 (Molecular formula: BrCl) or should these be omitted?

CAS	Name	Mol. Formula
12360-50-8	Bromine chloride	BrCl3
12360-51-9	Bromine chloride	Br2Cl2
12360-52-0	Bromine chloride	Br3Cl
55799-34-3	Bromine chloride	Br2Cl

6. Once an EFED chemical is verified and entered into the UNIFY Chemicals, return to Step 3 of EFED Chemical Verification. The new chemical name, CAS#, target species, and synonyms should be entered into the file G:\ECOTOX Schedule for EFED Pesticides.doc.

7. To find the target species group(s) for any pesticide, go to the PAN website and enter in the EFED chemical at http://www.pesticideinfo.org/Search_Chemicals.jsp

The target species is the same as the “use type” category on the search results page. If no target species is available through PAN, NA is entered in the EFED schedule.

The master ECOTOX schedule will identify the TARGET/EFFICACY species groups (see Table 1) and if the chemical invokes the RLF determination (Red-legged frog group requests).

Table 1. Chemical Use Type Category (PAN) and ECOTOX Target Species Groups

Chemical Use Type	Target Species Group
Avicide/Bird Repellant	Laboratory/Domesticated Birds (Wild Birds, OK)
Algaecide	Terrestrial Algae
Deer Repellant	No target group
Defoliant/ Plant Growth Regulator	Terrestrial Plants (See Appendix A)
Fumigant	Terrestrial Fungi, Insects/Mites (BEES, OK), Nematodes
Fungicide	Terrestrial Fungi
Herbicide	Terrestrial Plants (See Appendix A)
Insect Growth Regulator	Terrestrial Insects, Mites (BEES, OK)
Insecticide*	Terrestrial Insects, Mites (BEES, OK) For some Red-Legged Frog (RLF), San Francisco chemicals, all terrestrial *Lepidoptera* and *Colleoptera* species are valid to code, see Table 2
Microbiocide	Terrestrial Fungi
Molluscicide	Terrestrial Mollusks (within the INVERT subdatabase)
Nematocide	Terrestrial Nematodes (Note: Some older citations may still be listed under INVERT species group)
Piscicide	No target group
Rodenticide	Terrestrial Rodents (Other mammals OK)
Wood Preservative	No target group

Table 2: Additional Species to be Assessed with California (San Francisco) Red-Legged From Lawsuit Chemicals (chemical list found at N:\\Chemicals\EFED Schedules tabs SFB List A and SFB Lists B)

Common Name	Scientific Name	Species Group	Unify Species
Alameda whipsnake	*Coluber lateralis euryxanthus*	HERP	NO
Bay checkerspot butterfly	*Euphydryas editha bayensis*	INSECT (Nymphalidae)	NO
California clapper rail	*Rallus longirostris obsoletus*	AVIAN	Not subspecies

Common Name	Scientific Name	Species Group	Unify Species
California freshwater shrimp	*Syncaris pacifica*	INVERT (Decapoda)	NO
California tiger salamander	*Ambystoma californiense*	HERP	NO
Delta smelt	*Hypomesus transpacificus*	FISH	NO
Salt marsh harvest mouse	*Reithrodontomys raviventris*	MAMMAL	NO
San Francisco garter snake	*Thamnophis sirtalis tetrataenia*	HERP	Not subspecies
San Joaquin kit fox	*Vulpes macrotis mutica*	MAMMAL	Not subspecies
Tidewater goby	*Eucyclogobius newberryi*	FISH	NO
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	INSECT (Coleoptera: Cerambycidae)	NO

The Quick Glance (G: EFED_Quick_Glance.xls) for chemicals will be updated with the target/efficacy groups should be listed as it is terms used in EFED literature searches and ECOTOX holdings searches. If <50 citations and/or papers are received for any chemical (only initial search, not subsequent (refresh), forward a message to the EPA staff to determine whether all TARGET citation/papers should be acquired and coded.

8. During EFED reviewing process, reviewers may find papers with additional possible synonyms for the Chemical of Concern (COC). These synonyms will have to be verified using the process above. If the chemical is indeed a synonym of the COC, it will have to be entered into the Unify Chemicals (if not present already). All synonyms used during the coding of papers must be verified in the Unify Chemicals. Note: PAH and 24DXY were group codes, but as specific chemicals were added, the term now means that test chemical under this chemical group is reported, but specific chemical code not created, so the group code is assigned.

9. Upon completion of the chemical verification process, set up the chemical tracking and reports (see the EFED Chemical Reports SOP).

CONDUCTING LITERATURE SEARCHES

Proquest (formerly CSA), Toxline, Science Direct, Current Contents, Agricola, Dissertation Abstracts and the ECOTOX reference collection are included as comprehensive toxicology literature sources. Specific searches may be conducted via STN (SciFinder) when the chemical requested yields a small number (<50 applicable) of citations from standard search strategies (only initial search, not subsequent (refresh),.

ProQuest (http://search.proquest.com/) Vendor that provides a variety of databases. Currently used to search former CSA databases via (Environmental Science and Pollution Management – ESPM), Toxline and Current Contents via EPA Intranet. ProQuest is also the source to locate U.S. dissertation abstracts and thesis. Databases within ProQuest selected is Environmental Sciences and Pollution Management (1967-present):

TOXicology information onLINE (TOXLINE Special) via TOXNET (http://toxnet.nlm.nih.gov)

Toxline includes toxicological, pharmacological, biochemical and physiological effects of drugs and other chemicals. Citations in TOXLINE cover publication years from about 1965 to present. About 9,300 new citations are added each month; the file contains over three million records. The records are derived from about 18 secondary sources, including BIOSIS (through year 1999). Chemical substances can be searched by entering their corresponding CAS Registry Numbers and/or synonyms.

Science Direct (www.sciencedirect.com)

Since its commercial launch in 1999, ScienceDirect has evolved from a web database of Elsevier Science journals to one of the world's largest providers of scientific, technical and medical (STM) literature. A comprehensive and peer-reviewed titles include over 1800 journals from Elsevier Science and over four million articles and over 59 million abstracts from all fields of science. PubMed (MEDLINE) is included as a searchable database.

AGRICOLA (AGRICultural OnLine Access, http://agricola.nal.usda.gov/) is an extensive bibliographic database consisting of records for literature citations of journal articles, monographs, theses, patents, translations, microforms, audiovisuals, software, and technical reports. Available since 1970, AGRICOLA serves as a document locator and bibliographic access and control system for the National Agricultural Library (NAL) collection, but since 1984 the database has also included some records produced by cooperating institutions for documents not held by NAL. (Began in April, 2012 replacing CSA Plant Sciences database).

Current Contents (via Web of Knowledge, EPA subscription) is the online version of ISI's popular *Current Contents* series of publications. *Current Contents* is a weekly service that reproduces the tables of contents from current issues of leading journals in the sciences, social sciences, and arts and humanities. Current Contents Search consists of two subsets used in ECOTOX toxicological searches: *Life Sciences*, and

Agriculture, Biology and Environmental Sciences (Began in April, 2012, replacing CSA Plant Sciences database).

ECOTOX Reference Collection

The ECOTOX reference collection at MED-Duluth will be searched using chemical names and COC codes. After tagging (within Unify Tag Refs screen) the citations with the COC codes for this chemical will be searched and output saved in RIS format,"ecoref_COC.txt format to be imported into ProCite with the open literature search files. Check the EPA Office of Water (OW) chemical searches to determine if chemicals have been searched. Include search results as part of EFED ProCite files, if found (per EPA 4/2011).

If the search is not the initial search, you must locate the previous searches completed for EFED or OW and include to remove duplicates and locate potential lower priority citations (Target, Efficacy, etc.) not previously ordered. You can locate the previous searches using the

Search Strategy Development

Searches for OPP chemicals are conducted using the following steps:

Chemicals

- Chemical trade names and some synonyms are found in G:\ ECOTOX Schedule for EFED Pesticides.doc . TOXLINE searches include the CAS number. . Only Chemical trade names and synonyms will be used in all other database searches. Long chemical names (IUPAC) nor EPA # terms are not used as there is no search syntax to capture these terms and citations found in the open literature do not contains these terms.

- Publication Year, Species and Language
    - No species or publication year restriction (unless chemical is a refresh).
    - No language restriction within the search interface. However, if there is a language field for the database, download language code and mark as "NON-ENGLISH" in Field #45 within ProCite.
- Exclusion terms
    - Human health and chemical method terms are removed from ProQuest, Toxline and Science Direct searches. No exclusion terms are used for Dissertation Abstracts, Agricola or Current Contents. The exclusion terms and keywords are partially what comprise the structure of the search strategy.

Procedures for Conducting the Literature Search

The following procedures are to be followed when conducting the literature searches:

- Create or update the literature search tracking files found on G:\dose\EFEDsearchstatus *month*.doc This is used for the initial tracking,

recording and error checking of completed searches prior to submitting/saving them electronically for review.

Each chemical search is downloaded separately, in order to identify and track each search chemical.

- EPA must approve any modification to the search strategy prior to conducting a search.

- The search strategy is saved and the number of hits are documented. Cut and paste the search history from each web search into a Word document table. This document will include all the literature search histories for each chemical, the date of the search and the resulting number of hits. These documents are created to provide a history of past chemical searches, so they do not have to be repeated. Examples of these search result files can be found by selecting any of the month priority folders under: N:\LITSRCH\EFEDLitSearch

- The resulting number of hits, number of ECOTOX citations, and number of dissertation abstracts are also placed in G:\docs\EFEDsearchstatus_month.doc files

- All data retrieved from a computerized literature search are transferred to a ProCite5 database file using the software and procedures according to the specifications provided for each commercial database. The master location customized import filters for ProCite, EndNote and Reference Manager is located at N:\litsrch\ProCite_Refman\

Search Output and Storage

The search will be downloaded in tagged and/or full output for all citations including abstracts, if provided. The downloaded search will be electronically transferred to a bibliographic database file using ProCite5 software. The standard ECOTOX Workform format will be used to convert citations. Within ProCite, the chemical searched and database source(s) will be identified. Duplicate citations between searches will be removed and Non-English citations will receive keyword (Field #45) with NON-ENGLISH and Field#40 = AT. Note: Duplicate ECOTOX citations are not removed, (abstract from searches may be copy/pasted into the ECOTOX citation for future reference – optional).

In the directory folder; N:\LITSRCH\EFEDLitSearch\, create a bi-monthly search priority folder similar to the following example; N:\LITSRCH\EFEDLitSearch\Apr - May Priority 07\

Within ProCite, the chemical searched and database source(s) will be identified. Duplicate citations will be removed. Citations will be identified as applicable for project.

Create a search result sub-folders for EACH of the months listed on the search priority folder. Example:

N:\LITSRCH\EFEDLitSearch\Apr - May Priority 07\April Search Results\

The monthly search result sub-folders will hold a backup copy of all the initial downloaded raw data files from the various Internet database searches.Sub-folders for individual chemicals should be created for all monthly chemicals of concern which will eventually hold the completed and compiled Procite database for that chemical. Examples

N:\LITSRCH\EFEDLitSearch\Apr - May Priority 07\BMC – Bromacil\

N:\LITSRCH\EFEDLitSearch\Apr - May Priority 07\SMM - Sulfometuron methyl\

Chemicals to be searched and their respective due dates are listed and updated regularly in the G:\ ECOTOX Schedule for EFED Pesticides.doc, EFED Phase I LITE EVAL status.xlsx and EFED_Quick_Glance_Revised.xls and EFED Tasks listing.xls.

ECOTOX Reference Manager Citations

The ECOTOX reference collection at MED-Duluth will be searched using the chemical names and codes listed in Unify EFED Main Menu and chemical codes added in Tag Refs screen. Citations are exported, via RIS export and included in the literature search files to eliminate duplicate citations before identification step.

Search Strategy

Special Instructions for Biological Toxicants:

When biological toxicants (lactic acid) or chemicals where chemical name return thousands of false hits (e.g., benzene), customized searches may be required. The customized strategy is forwarded to EPA coordinator for approval. Two common approaches are to drop the “Abstract” field as a search field and/or requesting that only CAS numbers searches be used.

Agricola (http://agricola.nal.usda.gov/)

1. Access the Agricola website: http://agricola.nal.usda.gov/
then go to , “Articles” area and “Advanced Search” .

2a . Within the advanced search for articles text box, add chemical names and set results per page to 100 (maximum). Chemical names will be trade names or synonyms. Long organic names do not locate valid results.

2.b. After downloading citations for the article search (see Step 3), click on "Select a Database" Books Catalog" Use same search terms and set maximum page to 100. Note: For larger chemicals (or those with common names, e.g., abscisic acid), would require additional testing and possible search restrictions utilizing subject codes.

3. Exporting both article and book citations are completed by scrolling to the bottom of the page displaying citations.
- Select Records "All on this page" (should be <=100) and then
- Select Format "Export Format"
- Click on "Format for Print or Save" to display that tag formatted citations in your web browser. Save each list of 100 citations displayed to a text file.

4. Open EndNote software. From the menu, select "File", then "Import", then click on "Import" button using the Agricola filter. Do this for all the saved files for that chemical. Within EndNote, select "File", then "Export", select, "RIS" format, type in file name then click on "Save" button.

5. Open ProCite sofware, and import (Tools, Import text file), saved RIS file using your RIS import filter (e.g., C:\Program Files\ProCite5\Config\ Ris_EndNote.cfg).

Current Contents (Only available via EPA Desktop Library at EPA MED site)

1. Access via the MED EPA Library intranet system – the "Web of Knowledge" link under the "Favorites" grouping (EPA Desktop Library).

2. "Select a Database," and select "Current Contents" as your database.

3. a.) Go to "Advanced Search"
   b.) Enter chemical name terms (could be copied/pasted from email) first (Topic) field (may have to add "TS=" in from of the chemical terms list and parenthesis around the chemical descriptions)
   c.) Insert Timespan year, as needed, and
   d.) Select editions "Agriculture, Biology & Environmental Science (ABES)" and "Life Sciences (LS)"
   e.) Perform search
4. After search is performed, click of the number of Results:
5. The bottom of the page is where the user can select all records, chose "Full Records", and save by clicking on the "ResearchID" button.

6. You will need to access password information for the "Research ID" area (User: dgrunwal@csc.com, Password: xxx) in order to allow citations to be saved.

7. Go to the tab labeled "My EndNoteweb" and check under "My References" to confirm the filename for the most recently saved search (should be "My Publications"). It may take a few minutes for the citations to show up in EndNote web (may want to leave area, then return)

Move saved citations into unique group using the primary chemical name as the group name. Look in the left column for "ResearcherID" and select "My Publications." Click on the "All" button to select all, select the group name, and click on the "Copy to Quick List" button. Notify CSC offsite staff that the task is complete the Endnote Web group name for chemicals completed.

8. If performing more than one chemical search, clear out search, by going back into the "Web of Knowledge" (Marked List) and by clicking on the "Clear Marked List" button.

9. At CSC site, open EndNote software and your EndNote web citations should automatically display on left sidebar or click on "transfer" from Endnote Web and transfer the chemicals of interest.

10. Within EndNote, click on Group to display citations for chemical of concern. Select "File", then "Export", select, "RIS" format, type in file name then click on "Save" button.

11. Open ProCite sofware, and import (Tools, Import text file), saved RIS file using your RIS import filter (e.g., C:\Program Files\ProCite5\Config\ Ris_EndNote.cfg).

- **ProQuest** (http://search.proquest.com/espm, see Contractor search staff for password) Select the Command Line Search
  - Choose the Environmental Science and Pollution Management (ESPM) ~~S~~
    -
  - Insert the following text into the Command Line Search box and replace the chemical name placeholders with synonyms found in:

    G:\docs\ECOTOX schedule for EFED pesticides.doc

    CAB(Chem name 1 OR Chem name 2) AND SFL("asfa 3") OR (SFL(toxicology OR pollution OR "water resources" PRE/1 abstracts) AND CC(01504)) OR (SFL("toxicology abstracts") AND CC("x 241*")) OR (SFL("ecology abstracts") AND CC(d 047*)) NOT IF(man or human* or child* or occupat* OR infant* OR homind* OR wom?n OR patient* OR OSHA OR chromatograph* or Spectrometr* or pediatric* or "public health")

  - Use Recent searches link in upper right corner of page to locate the search history. Save search strategy and number of total resulting hits.

  - Earliest years available to the present year is usually searched, unless it is a refresh. For refreshes, search by previous year if <6 months into year for previous search. Example: for previous search date March, 2007, search years 2006 – present for current refresh year range. For refresh from August, 2004,

search years 2004 – present for current refresh year range.

However, if too many search results are returned, there may be some difficulty in downloading all the results at once into a single file. This problem is usually due to download restrictions imposed by the database vendors. In such a case, the search should be split up by choosing to limit the end of the search results to an earlier publication year. This will result in fewer hits and smaller download files.

The hits returned from the first search should be downloaded and labeled accordingly, and then a second search should be run from the end publication year used in the previous search, to the present year and this should assist in retrieving all the results for the searches after combining the files together.

- The citations are transferred in via RIS format. Save the file as *csa*.txt file. Open the .txt file in ProCite and transfer using RIS ISI.cfg import file.

Science Direct (search will need to be done at EPA unless contractor has a UMD account) (www.sciencedirect.com)

- Choose the Advanced Search tab

- Insert the following text into the Command Search box and replace the chemical name placeholders with synonyms found in:

  g:\docs\ECOTOX schedule for EFED pesticides.doc file.

  TITLE-ABSTR-KEY(CHEMICAL NAME1 or CHEMICAL NAME2 or CHEMICAL NAME3 or CHEMICAL NAME4) AND NOT TITLE-ABSTR-KEY(human* or child* or occupat* OR infant* OR homind* or woman or women OR patient* OR OSHA OR chromatograph* or Spectrometr* or pediatric*)

  Use short chemical names only – do not search for synonyms with extra symbols (commas, , parentheses, etc.). For hyphenated terms, enclose phrase with brackets (e.g. {SD 5435}). If phrase has spaces, enclose terms with bracket,then a parenthesis, (e.g., {(SD-5435}).

- Sources = Journals and Books

- Subject:
  - Agricultural and Biological Sciences,
  - Biochemistry, Genetics and Molecular Biology

- Environmental Science
- Pharmacology, Toxicology and Pharmaceutical Science
- Veterinary Science and Veterinary Medicine

Export directly to ProCite file in RIS format with abstracts. Corrected, In press citations are acceptable to order and code for copy requests only. The updated bibliographic information will be updated after the final article is published. MED library (ILL) InPress citations will be transferred, but ordered at a later date.

Toxline (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?toxadv.htm)

- Insert the following text into the Command Search box and replace the CAS Registry Number placeholders with CAS numbers (including dashes) found in

  g:\docs\ECOTOX schedule for EFED pesticides.doc

  Chemical names may also be used.

  CHEMICAL NOT ((human* OR child* OR occupat* OR hominid* OR pediatric* OR Biochemistry/Methods)[MH])

  OR

  CAS REGISTRY NUMBER[rn] NOT (human* OR child* OR occupat* OR hominid* OR pediatric* OR Biochemistry/Methods[MH])

- PY 1900-present

- Include the subdatabases OR BIOSIS OR NTIS OR PESTAB [org] OR TSCATS [org] OR PUBMED[org])

- Download as tagged into html, then copy and paste entire citation list from html into Word. Save as a .txt file

- Imported into ProCite using MEDLARS – Default as database identifier

PubMed (http://www.ncbi.nlm.nih.gov/sites/entrez?db=pubmed)

Used as an alternative to Toxline, for largely human health related chemicals (e.g., drugs) to restrict to "animal" only organisms

- Insert the CAS# into the Command Search box (including dashes) found in

  g:\docs\ECOTOX schedule for EFED pesticides.doc

  Example: Search "PubMED" for "62-73-7"

- Select Limits Tab

  Under "Animals or Humans" box, select "Animals" checkbox

  Under "Subsets" box, select "Toxicology" checkbox

- Click on "Preview/Index" tab to view search history.

Save this search history (copy/paste) for documentation of search strategy.
Click on the link (number under the Results header)

Your search results will only display/download up to 1000 citations. If the results are larger, then break the search

SciFinder (only completed if limited data set for CSA, Toxline, and ScienceDirect)

This search in the Chemical Abstracts database via SciFinder software is conducted by EPA when less than 500 total citations are located via the other three searches for each chemical. SciFinder searches will always be done be EPA staff and results forwarded to contractor site. An email should be sent to EPA indicating when a SciFinder search should be done.

- Entered Research Topic "CHEMICAL NAME" OR use CAS registry number (better)

- Limited to English language

- Limited to document type Book, Dissertation, journal, preprint, report and review

- Select "Save As"

- Save as type "Tagged Format"

- Imported into ProCite using "SciFinder2003 config" file

Dissertation Abstracts

If able to access the **UMD library website**, use these instructions:

1. Enter UMD Library websiteUsing the advanced search selections,search chemicals by name and years as required.
2. Specify searches to include "Citations and abstract" (Drop down check box)
3. After search results are returned then select all by "Marking" citations with the "Mark" link/command. (only 30 can be downloaded at a time)

4. Choose "export" and then export directly to ProCite.
5. Export to applicable EFED ProCite Database.

If accessing Dissertation Abstracts via the **MED library Intranet site**, use these instructions.

1. Access the EPA MED library Intranet site "EPA Desktop Library" homepage. Locate and click the "Dissertations and Thesis" link within the EPA Desktop Library homepage that will display the DIALOG search page.

2. Search the chemicals of concern individually by inserting these search parameters: Chemical of concern and synonyms in the "Keywords Anywhere in Records"

3. Search all publication years.

4. Restrict to English language only (Note: This option does not appear to work)

5. Print the search page (with the search terms displayed) for each chemical. Print the brief title list for each chemical. This will document the search terms and title list.

6. Skim the citations for applicability by viewing on screen or hard copy.

7. For the potential applicable citations, save to an electronic file by clicking on "Display all".

8. Copy and paste the applicable/skimmed citation full text and abstract each into a new MS Word document for each chemical or group of chemicals being searched.

9. Format citations for Procite in MS Word by changing from ALL CAPS to Sentence case format by choosing the "FORMAT" Menu tab and then the "Change Case…" option. Select "Sentence Case" option, to change text from "ALL CAPS" to "Sentence case. These citations will be added by cutting/pasting to the ProCite search ID file. *(copy/paste into relevant fields) and applicable citations ordered.

10. Update the literature search tracking file with the number of new applicable citations found.

Initial ProCite Search Files and Search Documentation

File Location

Save search output and documentation files in directory, N:\LITSRCH\EFEDLitSearch\. Create new directory name by priority grouping (e.g., DecJan Priority) or chemical name, as needed. Verify search download information has been completed using the search terms and number of hits for each database searched. Check these numbers against the file to ensure you received all citations intended. This search history will be

used for tracking searches and search summary documentation.

Initial ProCite Formatting

After each transfer:

A. Change all to ECOTOX workform format

B. Add the applicable chemical code to Field#29

C. Add Source (Field#44) to include the vendor code, chemical and date:

Vendor Codes:

Agricola = Agricola
CC = Current Contents

CSA = Cambridge Scientific Abstracts or ProQuest (CSA)

TOXNET = Toxline

SciFinder = SciFinder

SD = Science Direct

DissAbs = Dissertation Abstracts (via ProQuest)

Example Source format:

New Searches "SD 4/25/07, ATZ 2007 "

Update searches "SD 4/25/07, ATZ REFRESH 2007 "

D. Move all non-citation fields to correct field (e.g. Field #42 contains abstract first, then any keywords after), (see Table 1 for full list of ProCite fields used).

If the citation is incomplete, don't correct these fields. Citation corrections will be rectified later and only those that will be ordered.

Tracking Searches

When a new chemical grouping is created (e.g., December/January) a new tracking file is created on the docs\on G:baikal\wwwroot\ directory and linked to the weekly project status web page.

The G: (docs on 'cscfed.root.ad\NPSData\Dul1\Shared_data') directory stores the tracking files for search progress. When the initial search files are received, a new row is added for each chemical and includes all the search information available (database hits, target species). As search information is available, this is added to the tracking file. Each week , the literature search status is updated regarding how many citations have

been ordered and how many are left to skimuntil the chemical grouping is completed.

Table 2. Standard ProCite5 and Reference Field Names

ProCite 5 Field# - ECOTOX Form Name	ProCite5 Transfer Field	ProCite 5 Transfer to Reference Manager Field	Reference Manager (Standard ECOTOX fields)
1 - Author	Automatic	Automatic	4 - Authors, Primary
3 - Address	Move to #18	Automatic	16 - Pub Place
4 - Title	Automatic	Automatic	3- Title, Primary
10 - Journal	Automatic	Populates – Notes Field #6	11 - Periodical (Manually transfer to #11. No field move either automatically or within the "Move field" option).
20 - Year	Automatic	Automatic	5 - Date, Primary
22 - Volume	Automatic	Automatic	12- Volume
24 - Issue	Automatic	Automatic	15 - Issue
25 - Pages	Automatic	Automatic	9/10 - Start and End Page
29 - Chemical code	Move to #19	Move to #30	30 - Misc 2
37 - Order Status or ECOREF #	Automatic	Automatic	27 - Availability
38 Order Info. Or ECOREF#	Automatic	Automatic	33 - Order Info.
39 - Sub database	Move to #43	Move to #32 (Field#25)	32 – Address
40 – Database	Automatic	Automatic	26 - ISSN/ISBN
42 - Abstract	Clear this field	Empty	6 - Notes (should be empty)
44 - Source	Move to #38	Move to User Def#5	22 - User Def 5
45- Keyword	Automatic	Automatic	7 – Keyword

Duplicate Checking

To list the duplicate citations in ProCite, first make sure that only the Title field is used for automatic checking. This menu option is found under Database, Configure Duplicates. Then, click on the "Duplicates" tab (at the bottom). This will list two or more duplicate citations. Displaying page number field (#25) and sort by title field helps to quickly determine duplicates. There are four possible actions to take in removing

duplicates:

- Exact duplicates from the same search database and chemical. One of the two citations can be deleted.
- Exact duplicates from different databases (e.g., CSA and TOXNET). Cut and paste (or type), so one citation reflects both database names and keep. Delete the unedited citation.
- Exact duplicates from same database, but different chemicals. Type or paste the one chemical into the other citation (these have usually been ID'd previously) and delete unedited citation.
- Not duplicate citations (close, e.g., part 1, part 2). Leave as is or edit the page numbers, if needed, so you can easily identify them when viewing duplicate lists.

Skim New Citations for Applicable Citations

1. Change Field#37 = "NON-APPLICABLE" this saves on typing, since most citations will not be ordered. If you determine the citation is applicable, then change the field to "OL ".
2. Determine the target species groups for each chemical: G:\ECOTOX Schedule for EFED Pesticies NEW.doc.

2. Search on "#40=empty" to locate citations to ID and as needed, the chemical of concern (#29 = xxx,xxx,xxx).

3. To ID, read the title and abstract/keywords. Read the data field SOP (See “Unify Datafields and Codes”).

Quick searches of the files may allow for a faster identification during the skimming process of a set of articles that are for the most part applicable or non-applicable. You can utilize a standard list of species groups at N:\LITSRCH\EFEDLitSearch\SPECIES LIST.doc). Use these species names to locate applicable terms first and extract citations to order quicker.

a). <u>If citation is Non-Applicable</u>

- Fill in Field #40 with appropriate habitat (this must be filled in). If a database cannot be determined, then place an "AT" in the field. (See “Unify Datafields and Codes”, Table 5)

- Fill in #39, if appropriate (See “Unify Data fields and Codes”, Table 7)

- Fill in #45 with valid reject keyword (if multiple, separate them by a comma, See “Unify Datafields and Codes”, Table 4).

b) <u>If applicable and non-target:</u> (this includes all <u>Aquatic</u> papers, as these are always ordered)

- Overwrite field #37 "NON-APPLICABLE" to read "OL" . If the citation is applicable, but does not contain the COC, then mark as “OL NO COC” to be ordered later.

- Fill in #40 with appropriate database A or T (this must be filled in). If you can't determine the database, then place an "AT" in the field.

- Field #39 with valid species group designator (see Table 2), if no ECOTOX species, this is left blank.

c) If applicable, but a terrestrial target or efficacy (see Table 3):

-Overwrite field #37 "NON-APPLICABLE" to read "TARGET"

-Fill in #40 with habitat S and/or T (this must be filled in).

-Field #39 with valid species group

EFFICACY Examples:

- Insecticide added removes the insect and results in a positive crop yield:
  Field #37 = EFFICACY
  Field #39 = P,INSECT

- Chemical added removes the disease or bacteria within the non-target plant organism and positive results are observed:
  Field #37 = EFFICACY
  Field #39 = P

d) If you are unsure if the article is it is applicable, place a "?" in the database field (#37) and the task manager will double check applicability at a later time.

Table 3: EFED Specific Keywords used for ProCite Citation ID Process (Field #37)

OL – Priority order from library or copy request. Citations are copied to Unify References.
OL – COMM Priority order commercial source. Citations are copied to Unify References.
OL – NO EXP TYPE Citations are copied to Unify References, but not ordered.
NON-APPLICABLE – Not applicable to ECOTOX nor EFED. A reject keyword must be entered in Field #45. Citations are copied to the historical Non-Applicable file.

Citations left in the master chemical ID file for later moving to Unify References:

- **TARGET** – When test chemical added is intended to impact the pest and the study only reports results on the target organism. From October, 2009 through May, 2012 some plants were designated as plants that were considered applicable to encode. The plant target list changed in June, 2012 (see Appendix A). View the Chemical Verification section of this document to determine when to order *Lepidoptera* and *Coleoptera* insect orders for the "lawsuit" chemicals.

  EFFICACY - When the test chemical added is intended to impact the pest or disease affecting a non-target organism, thereby data are reported as improving the health of the non-target organism. The positive results for the non-target organism will not be coded for EFED. If both adverse and beneficial results are reported, paper is ordered and all results are coded for that chemical. Examples of Efficacy papers include: Insecticide added removes the insect and results in a positive crop yield or chemical added removes the disease or bacteria within the non-target plant

organism and positive results are observed.

- **Plant/Insect Growth Regulators –** If the citation is not categorized as a Target or Efficacy, but is classified as a growth regulator, priority would only be given to those citations reporting toxic effects. Physiological or intended regulating response citations will be marked as a Target ("Target Growth Reg"). Example: Plant growth is regulated to prevent overgrowth (prune), which improves the quality of the organisms left (e.g., grass turf quality improves). If the the intended result is achieved, this is categorized as Target Growth Regulator.
- **RODEHH** - Rodent species not containing MOR, GRO, REP reported effects for Aliphatic Alcohols (Ethanol, Methanol, etc.)

4. After each ID session, search on #40=empty to determine how many citations you have processed. Unless there are many citations to order (>250), you can send them off to the task manager/data entry to order once each chemical has been completed. If there are a large number (>100) to order, send forward data entry in several smaller batches.
5. Quality assurance includes ensuring that each citations has been properly categorized as applicable – priority, target/efficacy or non-applicable, with a valid keyword. For biological toxicants, additional quality assurance is performed by selected staff who will precisely select toxicity tests (e.g., human health, physiological results (nutrients) vs. an ecotoxicity study. QA ID fields in ProCite file to ensure they are properly edited (Field #37, #39, #40, #45, #29).
   - All Field#37 = Non-applicable must have a valid reject code in Field #45
   - Search on the chemical of interest, you searched and display Field #37 and examine entries for any typos (the codes should be "OL", Non-applicable", or "ECOREF" or TARGET).
   - View the term index for reject keywords to locate typographical errors and fix.
   - View chemical code (#29) and species group(s) (#39) for any typographical errors.

Transfer Applicable New Citations to Reference Manager Format and Order Process

1. Ensure that citation fields contain the correct content (author, title, journal, year, volume, pagination) for each citation that will be ordered:

Missing citation information, critical to correct ordering can be located at:

- Toxnet: http://toxnet.nlm.nih.gov/ (or Google "Toxnet")
- Science Direct (SD): citations usually found by doing a Google search for citation. Corrected, In Press citations are acceptable to order and code for copy requests. The updated bibliographic information will be updated after the final article is published. Insert "PRESS" in the volume field.

2. Copy the marked "OL-" citations to a new file in the same directory as the original chemical grouping (e.g., DecJan Priority) and filename format as "OL-Chem code(date).pdt. Commercial orders (e.g, "COMM UMI") citations are sent to data entry staff with other citations, so citations can be added to a commercial order list (N:\Litacquis\commercial*.*) After you copy the citations, add today's date to the original chemical ProCite file marked citations (e.g., OL - 12/7/04) to Field#37.

3. Check applicable citations against ECOTOX References for duplicates before importing applicable citations. Search to locate possible duplicate citations already in Unify References. If the existing ECOTOX r citation does not have the current chemical code, add this to the Unify citation either within References (for unreceived or Non-Applicable citations, OR for received applicable, add via the skimming screen). The ECOREF location must be marked back in the ProCite search file, Field #37, as (ECOREF#(number), ECOREF(Outprocess), or ECOREF (InProcess) and the "OL - date" text removed.

4. Open the new "OL" ProCite file and prepare file for Unify import using the "ECOTOX Literature Acquisition and Paper Processing SOP (Import Refs option)".

5. After applicable citations have been imported into Unify References, send an email message to data entry staff indicating the file location for citations to be quality assured, formatted and sent to EPA for ordering (See example email below).

Processing Citations for Ordering

1. An email will be received from staff will provide the location of the order file to process:

Example Email

Subject: February EFED Priority Order – ATZ (WR001) (n=25)

(Note: If reorder, then denote "Priority Reorder" in the subject line)

Joanne,

Please duplicate check, format, and order n=150 (plus n=2 COMM UMI) citations for EFED, Atrazine, February Citations. Remember to separate out email address orders (ILLs that have email addresses) into separate order file.

Thank you!

2. Access Unify References and determine whether or not the publication is available from:

a.) Copy Request - the MED Library has a copy
b.) Copy Request - an electronically accessible web-site (SCI or WEB)
c.) ILL - unavailable; need to order via the MED library, Interlibrary Loan
d) COMM - if notified or determine that order should be obtained via NTIS (government reports) or UMI (North American thesis documents)

e) Author — author email is listed and the order source is ILL (do not use author order, if it is a copy request).

3. Quality assure key bibliographic fields (Journal/Sources, volume and pagination) and mark each citation as Order QAed within Unify. All citations are prepared for ordering via standard "ECOTOX Literature Acquisition and Paper Processing SOP (Order References)".
4. Once the references are prepared, search Order Refs for the citations by chemical and divide the "Copy Requests" "ILL" order batches and author requests. The batch name will include the month, chemical code (COC) and the type of order process and date (e.g., July ETHN Copy Requests 11/18/10)
5. Save the file(s) to the following location: N:\Litacquis\To Anne
6. Attach the files to an email to the EPA staff as follows (save a copy in a email):

Example Email

From Christina Suomi/CIV/CSC 08/31/2009 02:35 PM
To Chris Russom/DUL/USEPA/US@EPA
Cc Anne Pilli/CIV/CSC@CSC, Delores J Grunwald/CIV/CSC@CSC, Anita J Pomplun/CIV/CSC
Subject Fw: October EFED Priority Reorder - CBNDO, (n=9) (WR001)

Chris,

Here are 9 Author, Copy and Order Requests:


October CBNDO Author Order 08-31-09.doc


October CBNDO Order Rqsts 08-31-09.doc


October CBNDO Copy Rqsts 08-31-09.doc Anne to receive.

Thanks.

7. Update the Literature Search Status (G:/Docs/EFED SearchStatus.(month) with information about any ordered or completed chemicals.

Commercial Ordering Citations

Review the Citation Applicability

Ensure the content (per title/abstract) is applicable to the EFED project: chemical is still priority, original data, full article, toxicity test, English etc.). Also check citation for a full and valid (full name, volume, pages) citation.

Determine an Order Source

Usually the MED library will denote some potential source(s) to obtain the publication from. If not, then check various sources, depending on the type of publication (dissertation, government document, journal, book, conference, unpublished). Common EFED sources are listed in Table 4. Additional sources are found on Unify Help (Web Linkds)or in the ECOTOX About Literature Acquisition and Paper Processing document

for additional sources. Check for free sources (TSCA, ProQuest (UMI), Google, Thesis Canada before forwarding for purchase.

Table 4. Common EFED Commercial Acquisition Sources

Source/Vendor	Web Site	Types of Publications	Process	Cost/Comments
Reprints Desk	www.reprintsdesk.com	All journals (non-NTIS,UMI documents)	Ordered via contractor vendor account	~$40/per paper, varies depending on copyright cost
NTIS	www.ntis.gov	U.S. Government documents	Ordered separately – forward to EPA each month	Need to have both NTIS# and for OTS, the "Doc#"
UMI and British Library thesis	www.umi.com	U.S. Thesis		Add UMI#

NTIS order number for EPA/OTS documents can be located by searching the Toxline website (http://toxnet.nlm.nih.gov/) for the document. Type the NTIS order number in next to the EPA Document number in each EPA/OTS citation in ProCite. The MS.Word order files are located on N:\litacquis\commercial*.doc. Email the full list of citations to EPA to complete order processing. EPA will forward information about their order date and when items have arrived.

If commercial sources are exhausted, then the citation may be officially archived and not ordered. The archiving procedures are located in the "ECOTOX Literature Acquisition SOP".

RECEIVING PAPERS

For processing received publications for EFED, including microfiche, refer to the "ECOTOX Literature Acquisition and Paper Processing SOP (Receive References)".

IDENTIFYING PAPERS IN EXISTING ECOTOX HOLDINGS

Once a chemical has been placed on the priority list and chemical verification is complete, a search for all papers containing the chemical is conducted in the ECOTOX holdings. This is done by conducting a search in Unify References file by chemical code and by chemical name and synonyms in the title field. For more information on the Unify References searching, see "ECOTOX Literature Acquisition and Paper Processing SOP (Search References)".

Chemicals for each month are logged within the literature search logs to track the status of locating relevant chemicals for reordering and pulling from existing ECOTOX

holdings. These are stored on the G: drive (e.g., EFEDsearchstatus_AugSept09.doc).

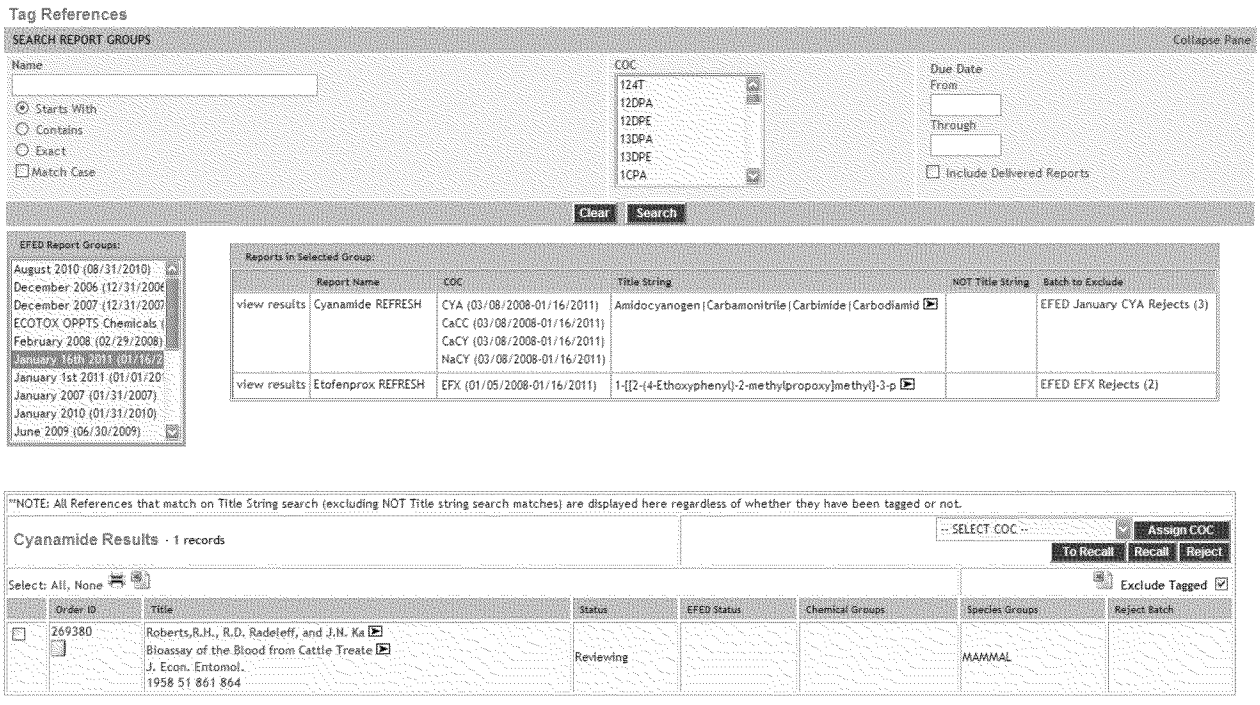
References Chemical and Title Searching

The ECOTOX References are searched two ways for potentially applicable papers: by chemical code and by title. The chemical verified names and COC codes are located on G:\ECOTOX Schedule for EFED Pesticides_NEW.doc.

Tag Refs	Searches chemical names within the publication title field and citations lacking the chemical code (COC) are displayed to be rectified. Tag potentially applicable citations with the chemical code for the report or reject.

The Unify system is designed to automatically locate potentially applicable citations through setting up chemical names using the Manage Main EFED Reports feature in Unify (see Chemical Verification area in this document).

1. Once the chemical names and names that generate false results and the custom reject batch steps have been completed, the Tag Refs screen will display the search results for chemical names to be rectified.



2. Select the report deadline date from the list, then the chemical name and click on View results to display the citations that meet the search criteria for locating potential citations that lack the chemical COC.

3. View all citations to determine if COC should be added and based on the paper/data status:

- Papers that have been **reviewed** for this chemical or the process of being

reviewed, will be rectified as part of the Unify review process.

- **Unreviewed (non-target)** papers should be recalled (mark as "To Recall") and the chemical COC will be added during the skim process.
- Citations (on order or received) that contain only **target** species will be marked with the chemical COC and then updated to target status via the Unify skim process. If you need to update the skimming information, make sure you use the checkmark in the skim screen that you do not have the paper (or system will automatically assign the paper to you. Update the Edit Project Relevance area and update to Target status, then generate the skim report.
- **Non-applicable citations** will be marked with the chemical COC within the Reference edit screen. Revisions to the keyword field must occur within the skim screen (not the Reference edit screen)
- Citations to be **ordered or reordered** should be updated so they are in the "to be ordered" status. If previously ordered citations are greater than three months, "Undo" the order date, to allow the system display citation within the "Order Refs" process.

4. If the citation does not contain the chemical, either update the "NOT" title text with the Manager Main EFED Reports or mark as "Reject" and the citation will be added to the custom reject batch and not included in the report for this chemical.

Re-Ordering Papers

Once all papers have been identified for a potential for a priority chemical and, double check, the citations will be re-ordered. These citations are marked are forwarded to staff to be ordered. Do not order TARGET citations.

Forwarding Re-order Request to EPA Staff via Email

Follow the same procedures for ordering as EFED literature search order process. However, the email message Subject will denote these are reorders or missing papers to be reordered:

To: Chris Russom
Cc: Anne Pilli, Delores Grunwald
Bcc:
Subject: January EFED Priority Reorder – Nerolidol (NER) WO#001 (n=10)

Chris,

Here are ten (10) EFED/NER Order and Copy Requests:


EFED Jan. NER Copy Request.doc


EFED Jan. NER Order Request.doc

Anne to Receive.

Thanks,

If a citation displays a "COMM – Date", check the status of the commercial order with the appropriate staff member. If a citation is marked COMM - and there is no date associated, this paper must be order via commercial order. The citation is forwarded to the staff processing commercial orders.

Recalling Papers for Chemicals in the Existing ECOTOX Holdings

As citations have been marked in the Tag Reference process To Recall, search on the all chemical COCs that need to be recalled and mark "To Recall" within the Search Refs process or on each citation. When ready to forward the request within the Recall Refs screen, search on the chemical COCs retrieve citations and then generate a batch citation file list.

Each chemical group (by EFED primary name) citations are marked and within the Recall Refs screen, click the "Recall" button to generate a recall batch and pasted into a Word file. The files are marked with the type of papers to be pulled, the number of papers to be pulled and the checkout reason (ex: UNREVIEWED n= 5 to pull for EFED (April), Chloropropham (CPP)) and are sent to EPA to pull from the MED files. Here is an e-mail request example:

From: Delores J Grunwald/USA/CSC@CSC

To: Chris Russom/DUL/USEPA/US@EPA

Cc: Anne Pilli/CIV/CSC@CSC

Date: 04/02/2010 04:35 PM

Subject: UNREVIEWED Papers needed from MED for April chemicals (Sodium Bisulfate, n=3) WR# 001

Chris,

The following UNREVIEWED papers (n = 3) need to be pulled from MED for
April EFED chemicals. Please check out to AP/EFED

Unify Recall Batch Name = April NaBS 04/02/10

Thank you!

- Delores

Save the recall batch file in the EFED directory by month, N:\CSC info\Database (offsite) Work Orders\FY2010-2011 SES3 Year 2\RECALL PAPER LISTS\

For unreviewed or unskimmed TARGET or EFFICACY papers, recall those skimmed prior to Unify production implementation (8/23/10).

APPLYING EFED CRITERIA

Once a paper is received for use in the EFED project either via the literature search or existing ECOTOX holdings, the EFED criteria checklist is applied. The supporting document for the EFED criteria selected is based on the "Interim Guidance of the Evaluation Criteria for Ecological Toxicity Data in the Open Literature" (http://neptune.ecodev.csc.com/intranet/sop_list/SOPs/SOPPhaselandII.wpd).

The EFED checklists are included in the Unify Skim screen and automatically generated based on the information entered from the paper.

The following checklist is applied to each paper within Unify and will generate a checklist to be attached to the back of each paper.

ECOTOX Reference No._____ Chemical(s)_____

General Instructions: If more than one experimental design is used in the study, multiple Literature Acceptance Criteria Checklist forms may be required, but the acceptability of the paper is based on at least one experimental design meeting all the Acceptability Criteria.

No.	Criteria / Instructions	Yes / No
1	The paper reports toxicology information for a chemical of concern to EFED.	
2	The article is published in the English language.	
3	The study is presented as a full article.	
4	The paper is a publicly available document.	
5	The paper is the primary source of the data.	
6	**The paper reports a calculated endpoint.**	
7	**The paper reports that treatment(s) were compared to an acceptable control**	
8	The paper reports an explicit duration of exposure.	
9	The paper reports a concurrent environmental chemical concentration/dose or application rate.	
10	The paper reports a Exposure Type (Ex Type) that is NOT by injection	
11	The paper reports a biological effect on live, whole organisms.	
12	The paper reports the species that was tested; and this species can be verified in a reliable source.	
13	The paper reports effects associated with a single chemical exposure. If the papers reports a Mixture where there is an addition of two or more chemicals were tested (not effluent, etc.), place MIXTURE with the exposure route/media data field.	
14*	For chemicals that have designated terrestrial species/species group(s) that should not be coded for EFED: The species/species group is acceptable for coding (NOT identified as a TARGET/EFFICACY test.	
15	Please evaluate ALL chemicals in paper for ECOTOX Priority Criteria (Items #6 & #7)	#6 #7

*Item #14 on the checklist (TARGET and EFFICACY), the definitions are located in Table 3.

Each criteria question has a reject code and codes for EFED are listed. They are as follows:

No.	Criteria / Instructions	REJECT CODE	
1	The paper reports toxicology information for a chemical of concern to EFED.	NO COC	
2	The article is published in the English language.	NO FOREIGN	
3	The study is presented as a full article.	NO ABSTRACT	
4	The paper is a publicly available document.	NO SOURCE	
5	The paper is the primary source of the data. Remember to identify applicable citations before returning.	NO REVIEW, REFS CHECKED	
6	**The paper reports a calculated endpoint.**	**NO ENDPOINT**	
7	**The paper reports that treatment(s) were compared to an acceptable control.**	**NO CONTROL**	
8	The paper reports an explicit duration of exposure.	NO DURATION	
9	The paper reports a concurrent environmental chemical concentration/dose or application rate.	NO CONC	
10	The paper reports a route exposure that is NOT by an injection type	NO EXP TYPE	
11	The paper reports the location of the study (e.g., laboratory vs. field).	NO LOCATION	
12	The paper reports a biological effect on live, whole organisms.	NO IN VITRO	
13	The paper reports the species that was tested; and this species can be verified in a reliable source.	NO SPECIES	
14	The paper reports effects associated with a single chemical exposure.	NO MIXTURE	
15	For chemicals that have designated terrestrial species/species group(s) that should not be coded for EFED: The species/species group is acceptable for coding (NOT identified as a TARGET/EFFICACY test.	TARGET, EFFICACY	
16	Please evaluate ALL chemicals in paper for ECOTOX Priority Criteria	#6	NO CONTROL
		#7	NO ENDPOINT, STATS

Papers Received after the Chemical Completed and Released to EFED

Hard copies of articles should be processed as usual, skimmed for applicability to ECOTOX, chemical, endpoint, receptor information assigned, completion of the EFED checklist, and any other ECOTOX processes that are normally followed. These papers are not coded into Unify, but returned to MED files. Microfiche received after the due date are marked in the Order Notes field in References citation as: "CSC has fiche, not printed", Completeness field updated to "Unprinted microfiche" and Reviewer/Reason updated to "filing/Fiche". The microfiche are then filed offsite in the Microfiche file. See "Receiving Papers on Microfiche" in the "ECOTOX Literatures Acquisition and Paper Processing SOP" for more information.

APPENDIX A: PLANT/INSECT SPECIES NOT CODED

Table 1 identifies agricultural plant species that are classified as TARGETS; there are no additions to this table unless prior approval has been obtained from EPA. Table 2 lists plant species that are classifed as WEED species. Table 2 lists species that have already been verified for UNIFY or ones that have been approved to add as WEEDS when they are encountered in publications. Data for TARGET AND WEED species will not be coded for EFED if they meet the following criteria:

The exposure must be to a species in Table 1 and the WEED species are reduced OR the purpose of the study is to evaluate the effectiveness of a chemical on weeds to benefit agricultural species (Table 1).

All target, weed and pest publications will be quality assured by a reviewer for accuracy. Please bundle these publications separately during the skim process.

Table 3 identifies Lepidoptera/Coleoptera species that are now classified as PESTS. This table lists species that have already been verified for UNIFY, or ones that have been approved to add as PESTS when they are encountered in publications. Data for PEST species will not be coded for EFED.

Table 1: Agricultural Plant Species Not Coded (modified from 2007 NASS crop list used in LOCATES Database version 2.2.3) (Added June, 2012)

Species Number	Genus Species Name	Common Name
3079	Abelmoschus esculentus	Okra
21944	Abelmoschus sp.	Okra
27944	Actinidia chinensis	Kiwi
3000	Allium cepa	Common Onion
3131	Allium fistulosum	Bunching Onion
8589	Allium odorum	Chinese Chives
3132	Allium porrum	Leek
3133	Allium sativum	Garlic
16687	Allium schoenoprasum	Wild Chive
24599	Allium scorodoprasum	
8590	Allium scorodoprasum ssp. viviparum	
4156	Allium sp.	Wild Onion
28199	Allium sphaerocephalon	Round-headed Leek
8591	Allium textile	Prairie Onion
3134	Allium vineale	Field Garlic

Species Number	Genus Species Name	Common Name
18189	Allium wakegi	Tree Onion
3153	Anethum graveolens	Dill
22610	Anethum sp.	
8622	Anona squamosa	
4159	Apium graveolens	Wild Celery
4057	Apium graveolens ssp. dulce	Wild Celery
3167	Armoracia rusticana	Horseradish
4162	Asparagus densiflorus	Sprenger Asparagus
4163	Asparagus officinalis	Garden Asparagus
21943	Asparagus sp.	Asparagus
3191	Avena abyssinica	Abyssinian Oat
3193	Avena fatua	Red Oats
25626	Avena myosuroides	
25225	Avena nuda	
3194	Avena sativa	Common Oat
4166	Avena sp.	Oat
3195	Avena sterilis	Animated Oats
8650	Avena sterilis ssp. ludoviciana	Animated Oat
3196	Avena strigosa	Bristle Oat
3197	Averrhoa carambola	Starfruit
21793	Averrhoa sp.	
8665	Azukia angularis	Bean
22777	Azukia sp.	
3210	Beta patellaris	Beet
3211	Beta procumbens	Cultivated Beet
18979	Beta sp.	Beet
4168	Beta vulgaris	Sugar Beet
4077	Beta vulgaris ssp. cicla	Chard
3212	Beta vulgaris ssp. vulgaris	Beet
3218	Bifora radians	Parsley
21709	Bifora sp.	
3229	Brassica alboglabra	Chinese Kale
25238	Brassica campestris ssp. pekinens	
3230	Brassica carinata	Abyssinian Mustard
3232	Brassica juncea	Brown Mustard
3233	Brassica napus	Colza
10611	Brassica napus var. napus	Rape
3235	Brassica nigra	Black Mustard
3236	Brassica oleracea	Cabbage
3238	Brassica oleracea ssp. capitata	Cabbage
3239	Brassica oleracea ssp. gemmifera	Brussels Sprouts

Species Number	Genus Species Name	Common Name
5375	Brassica oleracea ssp. italica	Broccoli
3237	Brassica oleracea var. botrytis	Broccoli
3242	Brassica rapa	Bird Rape
5219	Brassica rapa var. rapa	Turnip
4169	Brassica sp.	Mustard
3272	Capsicum annuum	Bell Pepper
22394	Capsicum sp.	Pepper
3275	Carica papaya	Papaya
23632	Carica sp.	
24329	Carthamus sp.	
3279	Carthamus tinctorius	Safflower
3281	Carya illinoinensis	Pecan
3288	Castanea sativa	European Chestnut
22209	Castanea sp.	
3319	Cichorium endivia	Endive
3320	Cichorium intybus	Chicory
23531	Cichorium sp.	
3322	Citrullus lanatus	Watermelon
8771	Citrus aurantifolia	Lime
3323	Citrus aurantium	Sour Orange
8774	Citrus aurantium ssp. bergamia	Bergamot Orange
18210	Citrus iyo	Iyo Orange
3324	Citrus jambhiri	Rough Lemon
3325	Citrus limon	Lemon
8775	Citrus maxima	Orange
3328	Citrus reticulata	Mandarin Orange
3329	Citrus sinensis	Orange
8777	Citrus x limonia	Mandarin Lime
3326	Citrus x nobilis	King Orange
3327	Citrus x paradisi	Grapefruit
3334	Cocos nucifera	Coconut
21342	Cocos sp.	
4173	Coffea arabica	Coffee
23038	Coffea sp.	
3339	Colocasia esculenta	Coco-Yam
4129	Corylus americana	American Hazel
3352	Corylus avellana	European Filbert
3353	Corylus cornuta	Beaked Filbert
23537	Corylus sp.	
20293	Crambe orientalis	Crambe
23777	Crambe sp.	

Species Number	Genus Species Name	Common Name
3368	Cucumis melo	Honeydew
18698	Cucumis melo melo var. cantalupensis	North American Cantaloupe
24723	Cucumis melo ssp. melo	
28748	Cucumis melo var. dudaim	
3369	Cucumis sativus	Cucumber
9927	Cucurbita maxima var. maxima	Pumpkin
3373	Cucurbita moschata	Squash
8412	Cucurbita sp.	Squash
22496	Cyamopsis sp.	
3377	Cyamopsis tetragonoloba	Clusterbean
3381	Cynara scolymus	Artichoke
4181	Daucus carota	Wild Carrot
3989	Daucus carota ssp. sativus	Carrot
4184	Dioscorea sp.	Yam
3416	Diospyros montana	Persimmon
20148	Elsholtzia argyi	Mint
20149	Elsholtzia splendens	Mint
5291	Eupatorium cannabinum	Sunflower
3461	Fagopyrum esculentum	Buckwheat
3469	Ficus carica	Fiku
8030	Ficus sp.	Fig
8967	Fortunella hindsii	Kumquat
4189	Fragaria sp.	Strawberry
3069	Fragaria virginiana	Strawberry
3477	Glycine max	Soybean
3480	Gossypium hirsutum	Cotton
4192	Gossypium sp.	Cotton
9013	Haplopappus sp.	Sunflowers
4194	Helianthus sp.	Sunflower
20581	Hordeum distichum	Barley
4196	Hordeum sp.	Barley
3501	Hordeum vulgare	Barley
3503	Humulus lupulus	Hop
3521	Ipomoea batatas	Sweet Potato
3530	Juglans regia	English Walnut
3541	Lactuca sativa	Lettuce
4202	Lactuca sp.	Lettuce
3554	Lens culinaris	Lentil
9577	Lens sp.	Lentils, Chilean
8036	Linum sp.	Flax

Species Number	Genus Species Name	Common Name
3573	Linum usitatissimum	Flax
4208	Lycopersicon sp.	Tomato
3599	Macadamia integrifolia	Gympie Nut
22500	Macadamia sp.	
4209	Malus sp.	Apple
3605	Malus sylvestris	Apple
3609	Mangifera indica	Mango
9120	Manihot esculenta	Tapioca
23162	Manihot sp.	
3615	Medicago sativa	Alfalfa
4210	Medicago sativa ssp. sativa	Alfalfa
4339	Mentha sp.	Mint
3625	Momordica balsamina	Southern Balsampear
9119	Momordica charantia	Balsampear
21509	Momordica sp.	
3630	Musa acuminata	Edible Banana
4330	Musa sp.	Banana
27939	Musa X paradisiaca	French Plantain
3643	Nicotiana glutinosa	Tobacco
4261	Nicotiana sp.	Tobacco
3645	Nicotiana tabacum	Tobacco
9157	Nicotiana xanthine	Tobacco
3651	Olea europaea	Olive
8223	Olea sp.	Olive
3666	Panax pseudoginseng	Ginseng
10703	Panax quinquefolius	American Ginseng
3672	Panicum miliaceum	Proso Millet
3699	Persea americana	Avocado
3701	Petroselinum crispum	Parsley
3708	Phaseolus vulgaris	Bean
24906	Pistacia sp.	Pistache
24907	Pistacia vera	Pistachio Nut
4222	Pisum sativum	Pea
4268	Pisum sp.	Pea
3778	Prunus armeniaca	Apricot
3779	Prunus avium	Mazzard Cherry
3781	Prunus cerasus	Sour Cherry
3782	Prunus domestica	Common Plum
3783	Prunus dulcis	Almond
3786	Prunus persica	Peach
4127	Prunus persica ssp. nucipersica	Nectarine

Species Number	Genus Species Name	Common Name
3796	Psidium guajava	Guava
3799	Punica granatum	Pomegranate
3803	Pyrus communis	Pear
3820	Raphanus sativus	Radish
8316	Raphanus sp.	Radish
3836	Ribes rubrum	Common Currant
4267	Ribes sp.	Currant
3636	Rorippa nasturtium-aquaticum	Watercress
4131	Rubus flagellaris	American Dewberry
20161	Rubus fruticosus	Bramble Blackberry
3845	Rubus idaeus	European Red Raspberry
4367	Rubus procerus	Himalaya Blackberry
3850	Rubus trivialis	Southern Dewberry
16327	Rubus ursinus	California Blackberry
3856	Saccharum officinarum	Sugarcane
3875	Sesamum orientale	Sesame
25587	Simmondsia chinensis	Jojoba
5134	Solanum lycopersicum lycopersicum	Tomato
4040	Solanum melongena	Aubergine
4074	Solanum tuberosum	Potato
4237	Sorghum sp.	Sorghum
3901	Spinacia oleracea	Spinach
4238	Spinacia sp.	Spinach
5139	Triticum dicoccon	Emmer
3956	Vaccinium pallidum	Blue Ridge Blueberry
4248	Vaccinium sp.	Blueberry
7811	Vigna angularis	Bean, Adzuki
3976	Vitis labrusca	American Grape
29104	Vitis riparia	Riverbank Grape
3977	Vitis rotundifolia	Muscadine Grape
4256	Vitis sp.	Grape
3978	Vitis vinifera	European Grape
3979	Vitis vulpina	Frost Grape
9533	Vitis x champini	Champin'S Grape
9534	Vitis X labruscana	Grape, Concord
4257	X Triticosecale sp.	Triticale
3984	Xanthosoma sagittifolium	Cocoyam
3987	Zea mays	Corn
4316	Zea mays ssp. mays	Corn
18718	Zea mays var. saccharata	Corn

Species Number	Genus Species Name	Common Name
21251	Zea sp.	Corn
9564	Zingiber officinale	Garden Ginger

Table 2: Weed Species Not Coded (modified from Federal and State Noxious Weeds list located at http://plants.usda.gov/java/noxiousDriver#state) (Added August, 2012)

Species Number	Scientific Name	Common Name
	Abutilon theophrasti Medik.	velvetleaf
	Acacia mearnsii De Wild.	black wattle
	Acacia paradoxa DC.	kangaroothorn
	Acaena novae-zelandiae Kirk	
	Acaena novae-zelandica Kirk, orth. var.	New Zealand bur
	Acaena pallida (Kirk) Allen	pale biddy-biddy
	Achnatherum brachychaetum (Godr.) Barkworth	punagrass
	Acroptilon repens (L.) DC.	Russian knapweed
3113	Aegilops cylindrica	Jointed Goatgrass
	Aegilops geniculata Roth	
	Aegilops ovata L. p.p.	ovate goatgrass
3117	Aegilops triuncialis	Barbed Goatgrass
	Aeginetia L.	aeginetia
	Aegopodium podagraria L.	goutweed
	Aeschynomene indica L.	Kat sola, Indian jointvetch
	Aeschynomene rudis Benth.	rough jointvetch
	Aeschynomene virginica (L.) Britton, Sterns & Poggenb.	curly indigo
	Ageratina adenophora (Spreng.) King & H. Rob.	crofton weed
	Ageratina riparia (Regel) King & H. Rob.	creeping croftonweed, Hamakua pamakani
	Agropyron repens (L.) P. Beauv.	quackgrass
3122	Agrostemma githago	Corn Cockle
	Alectra Thunb.	alectra
	Alhagi camelorum Fisch.	camelthorn
	Alhagi maurorum Medik.	camelthorn
	Alhagi pseudalhagi (M. Bieb.) Desv. ex B. Keller & Schaparenko	camelthorn
27827	Alliaria petiolata	Garlic Mustard
	Allium L.	wild onion, wild garlic
	Allium neapolitanum Cirillo	
	Allium paniculatum L.	panicled onion
	Allium vineale L.	wild garlic
	Allium vineale L. ssp. compactum (Thuill.) Coss. & Germ.	wild garlic
3138	Alopecurus myosuroides	Blackgrass

Species Number	Scientific Name	Common Name
	Alternanthera Forssk.	alligatorweed
	Alternanthera philoxeroides (Mart.) Griseb.	alligatorweed
29360	Alternanthera sessilis	Sessile Joyweed
	Alyssum corsicum Duby	yellowtuft
	Alyssum murale Waldst. & Kit.	yellowtuft
4088	Ambrosia artemisiifolia	Common Ragweed
	Ambrosia artemisiifolia L. var. elatior (L.) Descourtils	
	Ambrosia elatior L.	ragweed
	Ambrosia grayi (A. Nelson) Shinners	bur ragweed
	Ambrosia tomentosa Nutt.	skeletonleaf bursage
	Ambrosia trifida L.	giant ragweed
	Amorpha fruticosa L.	false indigo
	Ampelopsis brevipedunculata (Maxim.) Trautv.	porcelainberry
9114	Anchusa arvensis	Annual Bugloss
	Anchusa officinalis L.	common bugloss
	Andropogon bicornis L.	West Indian foxtail
3152	Andropogon virginicus	Broomsedge
3154	Anoda cristata	Spurred Anoda
	Anredera cordifolia (Ten.) Steenis	Madeira vine
	Anthemis arvensis L.	scentless chamomile
	Anthemis cotula L.	mayweed chamomile
	Anthriscus sylvestris (L.) Hoffm.	wild chervil
	Araujia sericifera Brot.	bladderflower
	Arctium minus Bernh.	common burdock
10380	Arctotheca calendula	Capeweed
	Ardisia elliptica Thunb.	shoebutton ardisia
	Artemisia absinthium L.	absinth wormwood
	Arthraxon hispidus (Thunb.) Makino	hairy jointgrass
3171	Arundo donax	Giant Reed
	Asphodelus fistulosus L.	onionweed
	Avena sterilis L.	animated oat, wild oat
19430	Azolla pinnata imbricata	Mosquito Fern
	Berteroa incana (L.) DC.	hoary alyssum
	Bocconia frutescens L.	plume poppy
	Borreria alata (Aubl.) DC.	buttonweed
	Brachypodium sylvaticum (Huds.) P. Beauv.	false brome
	Brassica arvensis (L.) Rabenh., nom. illeg., non Brassica arvensis L.	wild mustard

Species Number	Scientific Name	Common Name
	Brassica kaber (DC.) L.C. Wheeler var. pinnatifida (Stokes) L.C. Wheeler	wild mustard
	Brassica L.	mustard
	Bromus commutatus Schrad.	cheat, chess
	Bromus racemosus L.	
	Bromus secalinus L.	cheat, chess
	Bromus tectorum L.	drooping brome-grass
	Bryonia alba L.	white bryony
16612	Buddleja davidii	Butterfly Bush
	Butomus umbellatus L.	flowering rush
	Cabomba caroliniana A. Gray	Carolina fanwort, fanwort
	Callitriche stagnalis Scop.	pond water-starwort
	Calonyction muricatum (L.) G. Don	purple moonflower
	Calystegia sepium (L.) R. Br.	hedge bindweed
	Calystegia sepium (L.) R. Br. ssp. sepium	
	Cardamine impatiens L.	narrowleaf bittercress
	Cardaria chalapensis (L.) Hand.-Maz., orth. var.	lens podded hoary cress
	Cardaria chalepensis (L.) Hand.-Maz.	
	Cardaria draba (L.) Desv.	globe-podded hoary cress, globe-podded hoary cress, whitetop
	Cardaria pubescens (C.A. Mey.) Jarmolenko	hoary cress, whitetop
	Cardiospermum halicacabum L.	balloon vine
17791	Carduus acanthoides	Plumeless Thistle
	Carduus crispus L.	curled thistle
	Carduus L.	thistle
	Carduus nutans L.	musk thistle, musk thistle, nodding thistle
	Carduus pycnocephalus L.	Italian thistle
	Carduus tenuiflorus W. Curtis	slenderflower thistle
	Carex kobomugi Ohwi	Japanese sedge, Asiatic sand sedge
	Carthamus baeticus (Boiss. & Reut.) Nyman	smooth distaff thistle
	Carthamus lanatus L.	woolly distaff thistle
	Carthamus lanatus L. ssp. creticus (L.) Holmboe	
	Carthamus leucocaulos Sm.	whitestem distaff thistle
	Carthamus oxyacantha M. Bieb., orth. var.	wild safflower
	Carthamus oxyacanthus M. Bieb.	jeweled distaff thistle
	Carum carvi L.	wild caraway

Species Number	Scientific Name	Common Name
	Celastrus orbiculatus Thunb.	Oriental bittersweet, Asian or Asiatic bittersweet
	Cenchrus echinatus L.	southern sandbur
	Cenchrus incertus M.A. Curtis	field sandbur
	Cenchrus longispinus (Hack.) Fernald	longspine sandbur
	Cenchrus spinifex Cav.	
	Centaurea biebersteinii DC.	spotted knapweed
	Centaurea calcitrapa L.	purple starthistle
	Centaurea diffusa Lam.	diffuse knapweed
	Centaurea iberica Trevir. ex Spreng.	Iberian starthistle
	Centaurea jacea L.	brown knapweed, brown knapweed, rayed knapweed, brown centaury, horse-knobs, hardheads
	Centaurea macrocephala Puschk. ex Willd.	bighead knapweed
	Centaurea maculosa auct. non Lam.	spotted knapweed
	Centaurea melitensis L.	Malta starthistle
	Centaurea nigra L.	black knapweed
	Centaurea nigrescens Willd.	Vochin knapweed
	Centaurea pratensis Thuill., nom. illeg., non Salisb.	meadow knapweed
	Centaurea repens L.	Russian knapweed
	Centaurea solstitialis L.	yellow starthistle, yellow starthistle, St. Barnaby's thistle
	Centaurea squarrosa Willd.	squarrose knapweed
	Centaurea stoebe L. ssp. micranthos (Gugler) Hayek	
	Centaurea sulphurea Willd.	Sicilian starthistle
	Centaurea virgata Lam.	squarrose knapweed
	Centaurea virgata Lam. ssp. squarrosa (Willd.) Gugler	
	Centaurea virgata Lam. var. squarrosa (Willd.) Boiss.	squarrose knapweed
	Centromadia pungens (Hook. & Arn.) Greene ssp. pungens	
	Cereus hildmannianus K. Schum.	
	Chaenorhinum minus (L.) Lange	dwarf snapdragon
3312	Chondrilla juncea	Rush Skeletonweed
	Chorispora tenella (Pall.) DC.	purple mustard
	Chromolaena odorata (L.) King & H. Rob.	siamweed, bitterbush
	Chrysanthemum leucanthemum L.	oxeye daisy
	Chrysanthemum leucanthemum L. var. pinnatifidum Lecoq & Lamotte	ox-eye daisy

Species Number	Scientific Name	Common Name
	Chrysopogon aciculatus (Retz.) Trin.	golden false beardgrass
3320	Cichorium intybus	Chicory
	Cirsium arvense (L.) Scop.	Canadian thistle
	Cirsium japonicum Fisch. ex DC.	Japanese thistle
	Cirsium lanceolatum (L.) Scop., non Hill	bull thistle
	Cirsium Mill.	thistle
	Cirsium ochrocentrum A. Gray	yellowspine thistle
	Cirsium undulatum (Nutt.) Spreng.	wavyleaf thistle
	Cirsium vulgare (Savi) Ten.	bull thistle, spear thistle
	Citrus reticulata Blanco ssp. unshiu (Marcow.) D.Rivera Núñez et al.	Unshu orange
	Clematis orientalis L.	Chinese clematis
	Clematis vitalba L.	old man's beard
	Clidemia hirta (L.) D. Don var. hirta	Koster's curse
	Cnicus benedictus L.	blessed thistle
	Coccinia grandis (L.) Voigt	ivy gourd
	Commelina benghalensis L.	tropical spiderwort
	Convolvulus arvensis L.	European morning glory, field bindweed
	Convolvulus sepium L.	hedge bindweed
	Cortaderia jubata (Lem.) Stapf	
	Crassula helmsii A. Berger	Australian swamp stonecrop
	Crotalaria L.	crotalaria
	Crupina vulgaris Cass.	common crupina
	Cucumis melo L.	
	Cucumis melo L. var. dudaim (L.) Naud.	dudaim melon, Queen Anne's melon
	Cucumis myriocarpus E. Mey. ex Naud.	paddy melon
	Cupaniopsis anacardioides (A. Rich.) Radlk.	carrotwood
	Cuscuta approximata Bab.	smoothseed alfalfa dodder
	Cuscuta japonica Choisy	Japanese dodder
	Cuscuta L.	dodder
25797	Cuscuta reflexa	Giant Dodder
	Cymbopogon refractus (R. Br.) A. Camus	barbwire grass
	Cynanchum louiseae Kartesz & Gandhi	black swallow-wort, Louise's swallow-wart
	Cynanchum nigrum (L.) Pers., non Cav.	black swallow-wort
	Cynanchum rossicum (Kleopow)	European swallow-wort, pale

Species Number	Scientific Name	Common Name
	Borhidi	swallow-wart
	Cynanchum vincetoxicum (L.) Pers.	
	Cynara cardunculus L.	artichoke thistle
3382	Cynodon dactylon	Bermudagrass
	Cynodon Rich.	bermudagrass
	Cynoglossum officinale L.	houndstongue
3384	Cyperus esculentus	Yellow Nutsedge
5220	Cyperus rotundus	Purple Nutsedge
	Cytisus monspessulanus L.	French broom
	Cytisus scoparius (L.) Link	Scotch broom
	Cytisus scoparius (L.) Link var. andreanus (Puiss.) Dippel	Scotch broom
	Cytisus scoparius (L.) Link var. scoparius	Scotch broom
	Cytisus striatus (Hill) Rothm.	Portugese broom
3392	Datura stramonium	Jimsonweed
4021	Dichrostachys cinerea	Aroma
	Dichrostachys nutans Benth.	marabu
	Digitaria abyssinica (Hochst. ex A. Rich.) Stapf	African couch grass
	Digitaria scalarum (Schweinf.) Chiov.	African couch grass
	Digitaria velutina (Forssk.) P. Beauv.	velvet fingergrass, annual couchgrass
	Dioscorea alata L.	white yam
	Dioscorea bulbifera L.	air-potato
19815	Dipsacus fullonum	Common Teasel
	Dipsacus laciniatus L.	cutleaf teasel
	Dipsacus sativus (L.) Honck.	teasel
	Drymaria arenarioides Humb. & Bonpl. ex Schult. [excluded]	lightning weed
1358	Echinochloa crus-galli	Barnyard Grass
	Echium plantagineum L.	Paterson's curse
	Echium vulgare L.	blueweed, blueweed, blue thistle, blue devil, viper's bugloss, snake flower
	Egeria densa Planch.	Brazilian water-weed
	Elephantopus mollis Kunth	elephantopus, elephant's foot
	Elsholtzia ciliata (Thunb.) Hyl.	crested late-summer mint
	Elymus repens (L.) Gould	
	Elytrigia repens (L.) Desv. ex Nevski	quackgrass
8903	Emex australis	Three-Cornered Jack
	Emex spinosa (L.) Campd.	devil's thorn
	Epilobium hirsutum L.	hairy willow-herb, codlins and

Species Number	Scientific Name	Common Name
		cream
	Equisetum telmateia Ehrh.	giant horsetail
	Eriocereus martinii (Labour.) Riccob.	moon cactus
	Erodium cicutarium (L.) L'Hér. ex Aiton	redstem filaree
	Euphorbia cyparissias L.	cypress spurge
28749	Euphorbia dentata	Toothed Spurge
	Euphorbia esula L.	leafy spurge, wolf's milk
	Euphorbia esula L. var. esula	
	Euphorbia heterophylla L.	
	Euphorbia myrsinites L.	myrtle spurge
	Euphorbia oblongata Griseb.	oblong spurge
	Euphorbia prunifolia Jacq.	painted euphorbia
	Euphorbia pseudovirgata (Schur) Soó	leafy spurge
	Euphorbia serrata L.	serrate spurge
	Euphorbia terracina L.	Geraldton carnation spurge
	Fallopia japonica (Houtt.) Ronse Decr.	Japanese knotweed
	Fatoua villosa (Thunb.) Nakai	hairy crabgrass, mulberry weed
	Festuca filiformis Pourr.	gair fescue, fineleaf sheep fescue
	Franseria discolor Nutt.	skeletonleaf bursage
	Froelichia gracilis (Hook.) Moq.	slender snake cotton
	Galega officinalis L.	goats rue
	Galeopsis tetrahit L.	hempnettle
	Galinsoga parviflora Cav.	galinsoga
	Gaura coccinea Nutt. ex Pursh	scarlet gaura
	Gaura drummondii (Spach) Torr. & A. Gray	Drummond's gaura
	Gaura sinuata Nutt. ex Ser.	wavy-leaved gaura
	Genista monspessulana (L.) L.A.S. Johnson	French broom
	Geranium robertianum L.	herb Robert
	Glaucium flavum Crantz	sea or horned poppy, yellow horn poppy
	Glechoma hederacea L.	ground ivy
	Glossostigma diandrum (L.) Kunze	mud mat
	Glyceria maxima (Hartm.) Holmb.	tall mannagrass, reed mannagrass
	Grevillea banksii R. Br.	kahiliflower, Bank's grevillia
15852	Gypsophila paniculata	Baby's Breath
	Halogeton glomeratus (M. Bieb.) C.A. Mey.	halogeton
	Harrisia martinii (Labour.) Britton	

Species Number	Scientific Name	Common Name
4193	Hedera helix	English Ivy
	Hedera hibernica (G. Kirchn.) Bean2	English ivy
	Helianthus annuus L.	wild sunflower
	Helianthus ciliaris DC.	Texas blueweed
	Hemizonia pungens (Hook. & Arn.) Torr. & A. Gray	spikeweed
	Heracleum mantegazzianum Sommier & Levier	giant hogweed, giant hogweed, giant cow parsnip
	Hesperis matronalis L.	dame's rocket
	Heteropogon contortus (L.) P. Beauv. ex Roem. & Schult.	tanglehead
	Hibiscus trionum L.	Venice mallow, flower-of-an-hour, bladder ketmia, modesty, shoo-fly
	Hieracium ×floribundum Wimm. & Grab. (pro sp.) [caespitosum × lactucella]	meadow hawkweed
	Hieracium atratum Fr.	polar hawkweed
	Hieracium aurantiacum L.	orange hawkweed, orange hawkweed, orange paintbrush, red daisy flameweed, devil's weed, grim-the-collier
	Hieracium caespitosum Dumort.	yellow hawkweed, yellow hawkweed, yellow paintbrush, devil's paintbrush, yellow devil, field hawkweed, king devil
	Hieracium glomeratum Froel.	queen-devil hawkweed
	Hieracium L.	hawkweed
	Hieracium laevigatum Willd.	smooth hawkweed
	Hieracium pilosella L.	mouse ear hawkweed
	Hieracium piloselloides Vill.	meadow hawkweed
	Hieracium pratense Tausch	meadow hawkweed
	Hoffmannseggia densiflora Benth.	pignut
	Hoffmannseggia glauca (Ortega) Eifert	
	Homeria Vent.	Cape tulip
	Humulus japonicus Siebold & Zucc.	Japanese hops
	Hydrocharis morsus-ranae L.	European frog-bit
20292	Hyoscyamus niger	Black Henbane
16937	Hypericum perforatum	St. Johnswort
	Hypochaeris radicata L.	common catsear
	Hyptis pectinata (L.) Poit.	comb hyptis
	Hyptis suaveolens (L.) Poit.	wild spikenard
9032	Impatiens glandulifera	Ornamental Jewelweed
	Imperata brasiliensis Trin.	Brazilian satintail

Species Number	Scientific Name	Common Name
	Imperata brevifolia Vasey	satintail
3519	Imperata cylindrica	Cogon Grass
	Ipomoea carnea Jacq. ssp. fistulosa (Mart. ex Choisy) D. Austin	
	Ipomoea fistulosa Mart. ex Choisy	
	Ipomoea L.	morning glory
	Ipomoea triloba L.	three-cornered morning glory, three-lobed morning glory
	Ipomoea turbinata Lag.	
	Iris douglasiana Herb.	Douglas iris
	Iris missouriensis Nutt.	western blue flag
	Iris pseudacorus L.	iris, yellow flag iris
	Isatis tinctoria L.	dyers woad, dyers' woad
	Ischaemum rugosum Salisb.	ribbed murainagrass
	Iva axillaris Pursh	povertyweed
	Lactuca pulchella (Pursh) DC.	blue-flowering lettuce
	Lactuca tatarica (L.) C.A. Mey. var. pulchella (Pursh) Breitung	
	Lagascea mollis Cav.	acuate
	Landoltia punctata (G. Mey.) D.H. Les & D.J. Crawford	
	Lepidium draba L.	perennial pepper-grass
	Lepidium latifolium L.	broad-leafed pepperweed, tall pepperweed
	Leptochloa chinensis (L.) Nees [excluded]	Chinese sprangletop
	Lepyrodiclis holosteoides (C.A. Mey.) Fenzl ex Fisch. & C.A. Mey.	lepyrodiclis
	Lespedeza cuneata (Dum. Cours.) G. Don	sericea lespedeza
	Leucanthemum vulgare Lam.	ox-eye daisy, oxeye daisy, white daisy, whiteweed, field daisy, marguerite, poorland flower
	Limnophila indica (L.) Druce	ambulia
	Limnophila sessiliflora (Vahl) Blume	ambulia, limnophila, ambulia
	Linaria dalmatica (L.) Mill.	broad-leaved Dalmatian toadflax
	Linaria dalmatica (L.) Mill. ssp. dalmatica	Dalmatian toadflax
	Linaria genistifolia (L.) Mill.	narrow-leaved Dalmatian toadflax
	Linaria genistifolia (L.) Mill. ssp. dalmatica (L.) Maire & Petitm.	Dalmatian toadflax
	Linaria vulgaris Mill.	yellow toadflax
	Lolium temulentum L.	darnel
	Lychnis flos-cuculi L.	ragged robin
	Lygodium flexuosum (L.) Sw.	maidenhair creeper
	Lygodium japonicum (Thunb.) Sw.	Japanese climbing fern

Species Number	Scientific Name	Common Name
27094	Lygodium microphyllum	Old World Climbing Fern
	Lysimachia nummularia L.	creeping jenny, moneywort
	Lysimachia vulgaris L.	garden loosestrife
	Lythrum L.	purple loosestrife
	Lythrum salicaria L.	purple loosestrife
	Lythrum virgatum L.	European wand loosestrife
	Mahonia Nutt.	
	Malachra alceifolia Jacq.	malachra
	Malvella leprosa (Ortega) Krapov.	alkali mallow
	Matricaria perforata Mérat	scentless chamomile
10381	Medicago polymorpha	Burclover
	Medinilla venosa (Blume) Blume	
	Melaleuca quinquenervia (Cav.) S.F. Blake	melaleuca
	Melastoma L.	melastoma
	Melastoma malabathricum L.	Banks melastoma, melastoma
	Miconia Ruiz & Pav.	miconia
	Microstegium vimineum (Trin.) A. Camus	Japanese stilt grass, Nepalese browntop
	Mikania cordata (Burm. f.) B.L. Rob. [excluded]	African mile-a-minute
	Mikania micrantha Kunth	bittervine
4114	Mikania scandens	Climbing Hempweed
	Milium vernale M. Bieb.	milium
	Mimosa diplotricha C. Wright	giant false sensitive plant
	Mimosa invisa Mart., non Mart. ex Colla	giant sensitive plant
	Mimosa pellita Kunth ex Willd.	lollipop mimosa
	Mimosa pigra auct. non L.	giant sensitive plant, cat's claw
	Mirabilis nyctaginea (Michx.) MacMill.	wild four o'clock, wild four o'clock, umbrella-wort
	Miscanthus floridulus (Labill.) Warb. ex K. Schum. & Lauterb.	miscanthus, Japanese silvergrass
	Miscanthus sacchariflorus (Maxim.) Franch.	plume grass, Amur silvergrass
	Miscanthus sinensis Andersson	eulalia
	Monochoria hastata (L.) Solms [excluded]	arrow-leaved monochoria, arrowleaf monochoria
9144	Monochoria vaginalis	Pickerel Weed
	Montanoa hibiscifolia (Benth.) Standl.	tree daisy
	Morella faya (Aiton) Wilbur	
	Muhlenbergia schreberi J.F. Gmel.	nimblewill
	Murdannia keisak (Hassk.) Hand.-Maz.	marsh dew flower, Asian spiderwort
	Myosotis scorpioides L.	forget-me-not

Species Number	Scientific Name	Common Name
19886	Nardus stricta	Matgrass
	Nassella trichotoma (Nees) Hack.	serrated tussock
	Nasturtium microphyllum Boenn. ex Rchb.	
	Nasturtium officinale W.T. Aiton	
	Nechamandra alternifolia (Roxb.) Thw.	
	Neyraudia reynaudiana (Kunth) Keng ex Hitchc.	Burma reed
	Nothoscordum inodorum (Aiton) G. Nicholson	false garlic
	Ononis alopecuroides L.	foxtail restharrow
	Onopordum acanthium L.	Scotch thistle
	Onopordum illyricum L.	Illyrian thistle
	Onopordum L.	thistle
	Onopordum tauricum Willd.	Scotch thistle
	Opuntia aurantiaca Lindl.	jointed prickly pear
	Ornithogalum umbellatum L.	star-of-bethlehem
	Orobanche cooperi (A. Gray) A. Heller	Cooper's broomrape
	Orobanche L.	broomrape
	Orobanche minor Sm.	small broomrape
	Orobanche ramosa L.	branched broomrape
	Oryza longistaminata A. Chev. & Roehr.	red rice
	Oryza punctata Kotzchy ex Steud.	wild red rice
	Oryza rufipogon Griffiths	perennial wild red rice, red rice
	Oxyspora paniculata (D. Don) DC.	
	Packera glabella (Poir.) C. Jeffrey	
	Paederia cruddasiana Prain	sewer-vine
	Paederia foetida L.	skunk vine
	Panicum antidotale Retz.	blue panicgrass
	Panicum miliaceum L.	wild proso millet
3673	Panicum repens	Torpedo Grass
3678	Papaver somniferum	Opium Poppy
	Paspalum scrobiculatum L.	ricegrass paspalum
	Passiflora bicornis Mill.	
	Passiflora mollissima (Kunth) L.H. Bailey	banana passionfruit, banaba poka
	Passiflora pulchella Kunth	wingleaf passionfruit
	Passiflora tripartita (Juss.) Poir. var. mollissima (Kunth) Holm-Niesen & P.M. Jørg.	
	Pastinaca sativa L.	wild parship
	Peganum harmala L.	African rue, Syrian rue
3296	Pennisetum ciliare	Buffelgrass

Species Number	Scientific Name	Common Name
	Pennisetum clandestinum Hochst. ex Chiov.	Whittet Kikuyu grass, kikuyugrass
	Pennisetum macrourum Trin.	African feathergrass
	Pennisetum pedicellatum Trin.	kyasumagrass
	Pennisetum polystachion (L.) Schult.	missiongrass
	Pennisetum polystachyon (L.) Schult., orth. var.	missiongrass, thin napiergrass
	Pennisetum setaceum (Forssk.) Chiov.	fountaingrass
3702	Phalaris arundinacea	Reed Canarygrass
	Phyllanthus tenellus Roxb.	longstalked phyllanthus
	Phyllanthus urinaria L.	chamberbitter, niuri
	Physalis longifolia Nutt.	long-leaf groundcherry
	Physalis viscosa L.	grape groundcherry
	Picris hieracioides L.	hawkweed oxtongue
	Piper aduncum L.	spiked pepper
	Plantago aristata Michx.	bracted plantain
	Plantago lanceolata L.	buckhorn plantain
9917	Poa compressa	Canada Bluegrass
	Polygonum ×bohemicum (J. Chrtek & Chrtkovß) Zika & Jacobson [cuspidatum × sachalinense]	Bohemian knotweed
	Polygonum caespitosum Blume, orth. var.	bristled knotweed
	Polygonum cespitosum Blume, nom. inq.	
	Polygonum cuspidatum Siebold & Zucc.	Japanese knotweed, Japanese bamboo
	Polygonum perfoliatum L.	Mile-a-minute vine or weed, Asiatic tearthumb
	Polygonum polystachyum Wall. ex Meisn.	Himalayan knotweed
	Polygonum sachalinense F. Schmidt ex Maxim.	giant knotweed
	Portulaca oleracea L.	common purslane
	Potamogeton crispus L.	crisped pondweed, curly pondweed
	Proboscidea louisianica (Mill.) Thell.	unicorn-plant
	Pueraria lobata (Willd.) Ohwi	kudzu-vine
24631	Pueraria montana	Kudzu
	Pueraria montana (Lour.) Merr.	kudzu, Japanese arrowroot
3798	Pueraria phaseoloides	Tropical Kudzu
	Pueraria thunbergiana (Siebold & Zucc.) Benth.	kudzu
	Ranunculus acris L.	tall buttercup

Species Number	Scientific Name	Common Name
	Ranunculus ficaria L.	lesser celandine, fig buttercup
3817	Ranunculus repens	Creeping Buttercup
	Rhus toxicodendron L.	poison ivy
	Rorippa amphibia (L.) Besser	water yellowcress, great yellowcress
	Rorippa austriaca (Crantz) Besser	Austrian field cress
	Rorippa microphylla (Boenn. ex Rchb.) Hyl. ex Á. Löve & D. Löve	onerow yellowcress
	Rorippa sylvestris (L.) Besser	creeping yellow field cress
	Rottboellia cochinchinensis (Lour.) W.D. Clayton	itchgrass, corngrass, raoulgrass
	Rottboellia exaltata (L.) L. f.	itchgrass
	Rumex acetosella L.	sheep sorrel
	Rumex altissimus Alph. Wood	smooth dock
	Rumex crispus L.	sour dock
	Rumex L.	
	Saccharum spontaneum L.	wild sugarcane
	Salsola collina Pall.	spineless Russianthistle
	Salsola kali L.	Russian thistle
	Salsola kali L. ssp. tenuifolia Moq.	Russian thistle
	Salsola L.	thistle
	Salsola paulsenii Litv.	barbwire Russianthistle
	Salsola tragus L.	common Russianthistle
	Salsola vermiculata L.	wormleaf salsola, wormleaf saltwort
20598	Salvia aethiopis	Mediterranean Sage
	Salvia pratensis L.	meadow clary
	Salvia sclarea L.	clary sage
	Salvia virgata Jacq.	southern meadow sage
	Salvinia auriculata Aubl.	giant salvinia, salvinia
	Salvinia biloba Raddi	giant salvinia
	Salvinia herzogii de la Sota	giant salvinia
	Salvinia molesta Mitchell	giant salvinia
	Salvinia Ség.	salvinia
	Saponaria officinalis L.	bouncingbet
	Scolymus hispanicus L.	golden thistle
	Scolymus L.	thistle
	Secale cereale L.	cereal rye
	Senecio glabellus Poir.	cressleaf groundsel
	Senecio inaequidens DC.	South African ragwort
	Senecio jacobaea L.	tansy ragwort, stinking Willie
	Senecio madagascariensis Poir.	fireweed
	Senecio squalidus L.	Oxford ragwort

Species Number	Scientific Name	Common Name
3872	Senecio vulgaris	Common Groundsel
	Sesbania exaltata (Raf.) Rydb. ex A.W. Hill	tall indigo, coffee bean
	Sesbania herbacea (Mill.) McVaugh	
	Setaria faberi Herrm.	giant foxtail
	Setaria pallidifusca (Schumach.) Stapf & C.E. Hubbard, orth. var.	cattail grass
	Setaria pumila (Poir.) Roem. & Schult.	
	Setaria pumila (Poir.) Roem. & Schult. ssp. pallidefusca (Schumach.) B.K. Simon	
	Sicyos angulatus L.	burcucumber
	Silene latifolia Poir. ssp. alba (Mill.) Greuter & Burdet	white cockle
	Silphium perfoliatum L.	cup plant
	Silybum Adans.	thistle
	Silybum marianum (L.) Gaertn.	milk thistle
	Sinapis arvensis L.	
	Sinapis arvensis L. ssp. arvensis	
	Sinapis L.	mustard
	Solanum cardiophyllum Lindl.	heartleaf nightshade
	Solanum carolinense L.	Carolina horsenettle
	Solanum dimidiatum Raf.	Torrey's nightshade
	Solanum dulcamara L.	bittersweet nightshade
	Solanum elaeagnifolium Cav.	silverleaf nightshade
	Solanum lanceolatum Cav.	lanceleaf nightshade
	Solanum marginatum L. f.	white-margined nightshade
	Solanum ptycanthum Dunal	black nightshade
	Solanum robustum Wendl.	
	Solanum rostratum Dunal	buffalobur, buffaloburr
	Solanum tampicense Dunal	wetland nightshade
	Solanum torvum Sw.	turkeyberry, terongan
	Solanum viarum Dunal	tropical soda apple
	Soliva sessilis Ruiz & Pav.	lawnweed
3889	Sonchus arvensis	Perennial Sow Thistle
3889	Sonchus arvensis	Perennial Sow Thistle
	Sorghum almum Parodi	perennial sorghum
	Sorghum bicolor (L.) Moench	shatter cane, wild cane
3897	Sorghum halepense	Johnson Grass
	Sorghum propinquum (Kunth) Hitchc.	sorghum
	Sparganium erectum L.	exotic bur-reed
	Sparganium erectum L.	branched burreed, exotic bur reed

Species Number	Scientific Name	Common Name
	Spartium junceum L.	Spanish broom
	Spermacoce alata Aubl. [excluded]	winged false buttonweed
	Sphaerophysa salsula (Pall.) DC.	Austrian peaweed
27882	Stachys floridana	Florida Betony
	Stipa brachychaeta Godr.	puna grass
	Stipa trichotoma Nees	nasella tussock
4064	Striga asiatica	Witchweed
	Striga Lour.	witchweed
	Symphytum asperum Lepechin	rough comfrey
3916	Taeniatherum caput-medusae	Medusahead Rye
	Tagetes minuta L.	wild marigold
	Tanacetum vulgare L.	common tansy
	Themeda villosa (Poir.) A. Camus	Lyon's grass
	Thymelaea passerina (L.) Coss. & Germ.	spurge flax
	Tibouchina Aubl.	tibouchina
	Torilis arvensis (Huds.) Link	hedgeparsley
	Toxicodendron pubescens Mill.	
	Toxicodendron radicans (L.) Kuntze	poison ivy
	Toxicodendron vernix (L.) Kuntze	poison sumac
	Triadica sebifera (L.) Small	
	Tribulus terrestris L.	puncturevine
	Tridax procumbens L.	coatbuttons, tridax daisy
	Tripleurospermum perforatum (Mérat) M. Lainz	
	Triumfetta rhomboidea Jacq.	paroquet bur
	Triumfetta semitriloba Jacq.	Sacramento bur
	Tussilago farfara L.	coltsfoot
	Ulex europaeus L.	gorse, gorse, furze
	Urena lobata L.	caesarweed
27949	Urochloa panicoides	Liverseed Grass
	Valeriana officinalis L.	garden heliotrope
	Verbascum blattaria L.	moth mullein
	Verbascum thapsus L.	common mullein
	Vincetoxicum hirundinaria Medik.	pale swallow-wort
	Vincetoxicum nigrum (L.) Moench	black swallow-wort
	Viscum album L.	European mistletoe
	Vossia cuspidata Griff.	hippo grass
	Xanthium commune Britton	cocklebur
	Xanthium L.	cocklebur
	Xanthium spinosum L.	spiny cocklebur
	Xanthium strumarium L. var. canadense (Mill.) Torr. & A. Gray	

Species Number	Scientific Name	Common Name
	Zygophyllum fabago L.	Syrian bean-caper, Syrian beancaper

Table 3: Butterfly and Beetle Species Not Coded: The following species are not coded for the litigation chemical when the chemical use is insecticides (the primary source is the NAPIS Pest tracker list located at: http://pest.ceris.purdue.edu) (Added August 2012).

Species Number	Scientific Name	Common Name
19701	Acrobasis nuxvorella	Pecan Nut Casebearer
	Acrolepiopsis assectella	Leek Moth
16853	Adoxophyes orana	Tortrix Moth
	Aeolesthes sarta	Quetta Borer
	Aethina tumida	Small Hive Beetle
	Agrilus anxius	Bronze Birch Borer
	Agrilus auroguttatus	Goldspotted Oak Borer
	Agrilus biguttatus	Oak Splendour Beetle
	Agrilus hyperici	St. Johnswort Borer
	Agrilus planipennis	Emerald Ash Borer
	Agrilus sulcicollis	Jewel Beetle
11424	Agriotes sputator	Wireworm
	Agriotes ustulatus	Wireworm
10384	Agrotis ipsilon	Cutworm
20561	Alphitobius diaperinus	Lesser Mealworm
	Anisandrus maiche	Ambrosia Beetle
19710	Anomala orientalis	Oriental Beetle
	Anoplophora chinensis	Citrus Longhorned Beetle
27436	Anoplophora glabripennis	Asian Long-horned Beetle
27515	Anoplophora sp.	Long-horned Beetle
20098	Anthonomus eugenii	Pepper Weevil
16553	Anthonomus grandis	Boll Weevil
17702	Anthonomus grandis ssp. grandis	Boll Weevil
19588	Anthonomus pomorum	Apple Blossom Weevil
19020	Anthonomus rubi	Strawberry Blossom Weevil
	Archips fuscocupreanus	Apple Tortrix
	Archips podana	Fruit Tree Tortrix
	Archips xylosteanus	Variegated Golden Tortrix
	Argyresthia pruniella	Cherry Blossom Moth
	Aromia bungii	Red Neck Longhorn Beetle
	Autographa gamma	Silver Y Moth
	Blosyrus asellus	Rough Sweetpotato Weevil
	Cactoblastis cactorum	Cactus Moth
	Callidiellum rufipenne	Japanese Cedar Longhorn Beetle
	Callidiellum villosulum	Brown Fir Longhorned Beetle
26003	Chalcodermus aeneus	Cowpea Curculio
	Chilecomadia valdiviana	Carpenter Worm
	Chilo infuscatellus	Stem boring moth
10378	Chilo partellus	Sorghum Stem Borer

Species Number	Scientific Name	Common Name
	Chilo plejadellus	S Rice Stalk Borer
16869	Chilo suppressalis	Striped Riceborer
	Chilocorus kuwanae	Ladybird Beetle Scale Predator
	Chlorophorus annularis	Bamboo Borer
	Chlorophorus strobilicola	Slender-Banded Pinecone Longhorn Beetle
	Chrysodeixis chalcites	Golden Twin Spot Tomato Looper
	Cnestus mutilatus	Camphor Shot Borer
16835	Coleomegilla maculata	Ladybird Beetle
20477	Coleomegilla maculata ssp. lengi	Ladybird Beetle
27490	Conogethes punctiferalis	Yellow Peach Moth
18526	Conotrachelus nenuphar	Plum Curculio
	Copitarsia sp./spp.	Noctuid Moth
25127	Crocidolomia binotalis	Large Cabbage-heart Caterpillar
	Crocidosema aporema	Bud Borer; Bean Shoot Moth
	Curculio caryae	Pecan Weevil
	Curculio elephas	European Chestnut Weevil
20562	Cydia caryana	Hickory Shuckworm
16657	Cydia pomonella	Coddling Moth
	Darna pallivitta	Nettle Caterpillar
28648	Dectes texanus	Soybean Stem Borer
20444	Dendroctonus frontalis	Southern Pine Beetle
	Dendroctonus micans	Great Spruce Bark Beetle
18136	Dendroctonus ponderosae	Mountain Pine Beetle
	Dendrolimus pini	Pine-tree Lappet
	Dendrolimus superans	Sakhalin Silk Moth
20516	Diabrotica balteata	Banded Cucumber Beetle
16625	Diabrotica barberi	Northern Corn Rootworm
18540	Diabrotica longicornis	Northern Corn Rootworm
16615	Diabrotica sp.	Corn Rootworm
	Diabrotica speciosa	Cucurbit Beetle
24620	Diabrotica undecimpunctata	Spotted Cucumber Beetle
15987	Diabrotica undecimpunctata ssp. howardi	Southern Corn Rootworm
19699	Diabrotica virgifera	Leaf Beetle
16782	Diabrotica virgifera ssp. virgifera	Western Corn Rootworm
19698	Diabrotica vittata	Striped Cucumber Beetle
19647	Diaprepes abbreviatus	Root Weevil
27574	Dioryctria abietivorella	Fir Coneworm
19750	Dioryctria amatella	Southern Pine Coneworm
27555	Dioryctria mutatella	Moth
19004	Dioryctria reniculelloides	Spruce Coneworm
20453	Dioryctria sp.	Moth
	Dioryctria zimmermani	Zimmerman Pine Moth

Species Number	Scientific Name	Common Name
	Duponchelia fovealis	Pyralid Moth
	Enarmonia formosana	Cherry Bark Tortrix (CBT)
16833	Eoreuma loftini	Mexican Rice Borer
16124	Epilachna varivestis	Mexican Bean Beetle
20073	Epiphyas postvittana	Lightbrown Apple Moth
	Erannis defoliaria	Mottled Umber Moth
	Eudocima fullonia	Fruit Piercing Moth
	Eupoecilia ambiguella	European Grape Berry Moth
	Euwallacea fornicatus	Tea Shot-hole Borer
	Grapholita funebrana	Plum Fruit Moth
16860	Grapholita molesta	Oriental Fruit Moth
	Gypsonoma aceriana	European Poplar Shoot Borer
16831	Harmonia axyridis	Asian Lady Beetle
16846	Helicoverpa armigera	Old World Bollworm
29617	Helicoverpa punctigera	Australian Bollworm
16855	Helicoverpa sp.	Bud Worm
18123	Helicoverpa virescens	Tobacco Budworm
15908	Helicoverpa zea	Corn Earworm
18374	Heliothis armigera	Bollworm
	Heteronychus arator	Black Maize Beetle
20559	Hylobius abietis	Pine Weevil
	Hylobius transversovittus	Loosestrife Root Weevil
	Hylurgops palliatus	Lesser Spruce Shoot Beetle
	Hylurgus ligniperda	Redhaired Pine Bark Beetle
25068	Hypera brunnipennis	Egyptian Alfalfa Weevil
16733	Hypera postica	Weevil
19538	Hypera punctata	Clover Leaf Weevil
19700	Hyphantria cunea	Fall Webworm
27795	Ips calligraphus	Coarsewriting Engraver
	Ips sexdentatus	Sixtoothed Bark Beetle
	Ips subelongatus	Scolytid Beetle
27636	Ips typographus	European Spruce Bark Beetle
	Ischnopterapion virens	White Clover Weevil
25090	Lambdina fiscellaria	Hemlock Looper
	Leguminivora glycinivorella	Soybean Pod Borer
16058	Leptinotarsa decemlineata	Colorado Potato Beetle
	Leucoma salicis	Satin Moth
	Leucoptera malifoliella	Pear Leaf Blister Moth
	Lilioceris lilii	Lily Leaf Beetle
5775	Lissorhoptrus oryzophilus	Rice Water Weevil
26930	Listronotus maculicollis	Bluegrass Weevil
20473	Listronotus oregonensis	Carrot Weevil
28326	Listronotus texanus	Carrot Weevil

Species Number	Scientific Name	Common Name
	Lobesia botrana	European Grapevine Moth
28354	Loxagrotis albicosta	Western Bean Cutworm
16106	Lymantria dispar	European Gypsy Moth
	Lymantria dispar asiatica	Asian Gypsy Moth
	Lymantria mathura	Rosy Moth
	Lymantria monacha	Nun Moth
	Macronoctua onusta	Iris Borer
17621	Malacosoma disstria	Forest Tent Caterpillar
19724	Maladera castanea	Asiatic Garden Beetle
16862	Maruca vitrata	Bean Pod Borer
	Melanophila fulvoguttata	Hemlock Borer
25080	Melittia cucurbitae	Squash Vine Borer
	Metamasius hemipterus	Weevil
	Monochamus alternatus	Japanese Pine Sawyer Beetle
	Monochamus saltuarius	Sakhalin Pine Sawyer
	Monochamus scutellatus	Whitespotted Sawyer
	Monochamus sp./spp.	Cerambycid Sawyer Beetle
	Monochamus sutor	Small White-Marmorated Longhorned Beetle
	Naupactus leucoloma	Whitefringed Weevil
	Neoleucinodes elegantalis	Small Tomato Borer
	Odontota dorsalis	Locust Leafminer
	Operophtera bruceata	Bruce Spanworm
18927	Operophtera brumata	European Winter Moth
	Opogona sacchari	Banana Moth
	Orchestes alni	European Elm Flea Weevil
	Orthotomicus erosus	Mediterranean Pine Engraver
	Oryctes rhinoceros	Coconut Rhinoceros Beetle
28474	Ostrinia furnacalis	Asian Corn Borer
15979	Ostrinia nubilalis	European Corn Borer
	Otiorhynchus dieckmanni	Wingless Weevil
	Otiorhynchus ligustici	Alfalfa Snout Beetle
17266	Oulema melanopus	Cereal Leaf Beetle
	Paleacrita vernata	Spring Cankerworm
20546	Papaipema nebris	Stalk Borer
25637	Papilio demoleus	Lime Swallowtail
16692	Pectinophora gossypiella	Pink Bollworm
	Pericyma cruegeri	Poinciana Looper
18743	Phthorimaea operculella	Potato Tuberworm
11530	Pieris brassicae	Large White Butterfly
	Pityogenes chalcographus	Sixtoothed Spruce Bark Beetle
	Pityophthorus juglandis	Walnut Twig Beetle
15931	Platynota idaeusalis	Tufted Apple Bud Moth

Species Number	Scientific Name	Common Name
	Platypus quercivorus	Oak Ambrosia Beetle
16854	Plodia interpunctella	Indian Meal Moth
11531	Plutella xylostella	Diamondback Moth
10913	Popillia japonica	Japanese Beetle
	Popillia sp./spp.	Popillia beetles
	Prionus laticollis	Broadnecked Root Borer
	Pseudocneorhinus bifasciatus	Twobanded Japanese Weevil
16864	Pseudoplusia includens	Soybean Looper
	Pyrrhalta viburni	Viburnum Leaf Beetle
27664	Rhizotrogus majalis	European Chafer
	Rhyacionia buoliana	European Pine Shoot Moth(EPSM)
	Rhynchophorus ferrugineus	Red Palm Weevil
	Rhynchophorus palmarum	South American Palm Weevil
	Saperda calcarata	Poplar Borer
	Sasajiscymnus tsugae	Hemlock Woolly Adelgid Lady Beetle
	Scolytus intricatus	European Oak Bark Beetle
	Scolytus schevyrewi	Banded Elm Bark Beetle
	Scolytus scolytus	European Elm Bark Beetle
17567	Sesamia inferens	Pink Stem Borer
15976	Sesamia nonagrioides	Corn Borer
16995	Sitophilus granarius	Granary Weevil
16748	Sitophilus oryzae	Rice Weevil
16741	Sitophilus zeamais	Weevil
16824	Spodoptera eridania	Southern Army Worm
28488	Spodoptera exempta	African Armyworm
16837	Spodoptera exigua	Beet Armyworm
16735	Spodoptera frugiperda	Fall Armyworm
11533	Spodoptera littoralis	Egyptian Cotton Leafworm
16175	Spodoptera litura	Common Cutworm
28342	Spodoptera ornithogalli	Yellowstripe Armyworm
16823	Spodoptera sp.	Army Worm
	Sternochetus mangiferae	Mango Seed Weevil
5997	Stethorus punctum	Ladybird Beetle
27212	Stethorus punctum ssp. picipes	Spider Mite Destroyer
	Synanthedon myopaeformis	Apple Clearwing Moth
	Tetropium castaneum	Black Spruce Beetle
	Tetropium fuscum	Brown Spruce Longhorned Beetle
	Thaumatotibia leucotreta	False Codling Moth
	Thaumetopoea processionea	Oak Processionary Moth
	Tomicus destruens	Pine Shoot Beetle
	Tomicus minor	Lesser Pine Shoot Beetle
20079	Tomicus piniperda	Pine Shoot Beetle

Species Number	Scientific Name	Common Name
	Tortrix viridana	Green Oak Tortrix
5098	Tribolium castaneum	Rust-Red Flour Beetle
16654	Tribolium confusum	Confused Flour Beelte
	Trichoferus campestris	Chinese Longhorned Beetle
16838	Trichoplusia ni	Cabbage Looper
18155	Trogoderma granarium	Skin Beetle
	Trypodendron domesticum	Eur. Hardwood Ambrosia Beetle
27645	Tuta absoluta	Tomato Leaf Miner
20042	Xyleborus affinis	Sugarcane Shot Hole Borer
20040	Xyleborus catulus	Bark Beetle
	Xyleborus dispar	Pear Blight Beetle
18755	Xyleborus ferrugineus	Black Twig Borer
29267	Xyleborus glabratus	Redbay Ambrosia Beetle
19201	Xyleborus perforans	Island Pinhole Borer
22720	Xyleborus sp.	Beetle
20041	Xyleborus spinulosus	Bark Beetle
29140	Xyleborus volvulus	Ambrosia Beetle
29139	Xylosandrus crassiusculus	Asian Ambrosia Beetle
	Xylotrechus chinensis	Mulberry Borer
	Xylotrechus colonus	Rustic Borer
	Xylotrechus pyrrhoderus	Longhorned Beetle
	Xylotrechus quadripes	Coffee White Stem Borer Beetle
	Xylotrechus sp./spp.	Cerambycid Beetle
	Yponomeuta malinellus	Apple Ermine Moth (AEM)